# Crane Naval Surface Warfare Center – IN5170023498

## **Draft Class 3 Permit Modification**

# Issued 8/3/2018

## Permit Conditions & Modified Attachments

Attachment 0 Attachment II Appendix 1 Tables C-2, C-4, I-3, V.C-1a Figures D-2, D-4,D-10 Exhibits B-1, B-6, B-6A, B-11, B-13, B-14, F-6, G-11

## INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT HAZARDOUS WASTE MANAGEMENT PERMIT

Name of Permittee: Crane Naval Surface Warfare Center				
Hame of Formatos.				
Facility Location:	Crane, Indiana			
EPA Identification Number: IN5170023498				
Issuance Date:	<u>May 23, 2013</u>			
Expiration Date:	June 12, 2018			
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January 2014	Class 1 Modification	Updated the status of SWMUs		
August 2015	Class 1 Modification	Updated the status of SWMUs		
May 2016	Class 1 Modification	Building 3435 epoxy flooring replacement		
April 2017	Class 1 Modification	CDC Closure Plan Updates		
August 2018	Class 3 Modification	SPAM Unit		

## Authorized Activities

Pursuant to Indiana Environmental Statutes (IC 13) and the rules promulgated thereunder and codified in Title 329 of the Indiana Administrative Code, Article 3.1 (329 IAC 3.1), the State permit conditions (hereinafter called the permit) of the Resource Conservation and Recovery Act of 1976 (RCRA) permit are issued to Crane Naval Surface Warfare Center (hereinafter called the Permittee) to operate a hazardous waste facility located in Crane, Indiana, Section 6, Township 5, Range 4 at latitude 38° 52' 30" N and longitude 86° 52'30" W, Indiana Springs Quadrangle, on the U.S. Geological Survey topographic map.

The State RCRA program is authorized under 40 CFR Part 271 and Section 3006 of RCRA to administer the hazardous waste management program in lieu of the Federal program, including administration of most of the Hazardous and Solid Waste Amendments (HSWA) of 1984. Since the State of Indiana has not yet received authorization to administer the most recent hazardous waste program requirements under HSWA, additional permit conditions may be issued by the U.S. EPA to address these new requirements.

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The Permittee is authorized to conduct the following hazardous waste management activities:

	STORAGE		TREATMENT	DISPOSAL
X	Container		Tank	Injection Well
	Tanks		Surface Impoundments	Landfill
	Waste Pile	X	Incinerator	Land Application
	Surface Impoundment	X	Contained Detonation, and Open Burning/Open Detonation	

Federal regulations 40 CFR Parts 260 through 270 have been incorporated by reference. Where exceptions to incorporated Federal regulations are necessary, these exceptions will be noted in the text of the State rule. 329 IAC 3.1-1-7

The conditions of this permit were developed in accordance with the following applicable provisions of 329 IAC 3.1:

 ID & Listing of Hazardous Waste 329 IAC 3.1-6
 40 CFR 261 Subparts A, B, C, D, and Appendices I, II, III, VII, VIII, IX, X

 Standards for Owners and Operators of Treatment, Storage, and Disposal Facilities 329 IAC 3.1-9
 40 CFR 264 Subparts A, B, C, D, and E

- ☑ Ground Water Protection
  329 IAC 3.1-9
  40 CFR 264 Subpart F
- ✓ Closure and Post-Closure
  329 IAC 3.1-9
  40 CFR 264 Subpart G
- □ Financial Requirements 329 IAC 3.1-15

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- Use and Management of Containers
  329 IAC 3.1-9
  40 CFR 264 Subpart I
- Tank Systems
  329 IAC 3.1-9
  40 CFR 264 Subpart J
- Surface Impoundments
  329 IAC 3.1-9
  40 CFR 264 Subpart K
- □ Waste Piles 329 IAC 3.1-9 40 CFR 264 Subpart L
- Land Treatment
  329 IAC 3.1-9
  40 CFR 264 Subpart M
- □ Landfills 329 IAC 3.1-9 40 CFR 264 Subpart N
- ✓ Incinerators
  329 IAC 3.1-9
  40 CFR 264 Subpart 0
- Corrective Action for Solid Waste Management Units 329 IAC 3.1-9 40 CFR 264 Subpart S
- Miscellaneous Units 329 IAC 3.1-9 40 CFR 264, Subpart X
- Air Emission Standards for Process Vents
   329 IAC 3.1-9
   40 CFR 264 Subpart AA

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- Air Emission Standards for Equipment Leaks
   329 IAC 3.1-9
   40 CFR 264 Subpart BB
- Air Emission Standards for Tanks
  Surface Impoundments and Containers
  329 IAC 3.1-9
  40 CFR 264 Subpart CC
- Hazardous Waste Permit Programs
  329 IAC 3.1-13
  40 CFR 270 Subparts A, B, C, and D
- ✓ Inspection and Investigation
  329 IAC 3.1-1-3 and 329 IAC 3.1-1-4
- ☑ Enforcement329 IAC 3.1-1-5

## Permit Approval

The Permittee must comply with all terms and conditions of this permit. This permit consists of the conditions contained herein (including those in any Attachments) and the applicable rules and requirements contained in 329 IAC 3.1 and 40 CFR 260 through 270 as specified in the permit. Applicable rules are those which are in effect on the date of issuance of this permit. (See 329 IAC 3.1-13; 40 CFR 270.32)

This permit is based on the assumption that the information submitted in the permit application attached to the Permittee's letter dated July 5, 2012, and any subsequent amendments (hereafter referred to as the application) is accurate and that the facility has been or will be constructed and/or operated as specified in the application. Any inaccuracies found in the application may be grounds for the modification, revocation and reissuance, or termination of this permit (329 IAC 3.1-13-7), and potential enforcement action. The Permittee must inform the Indiana Department of Environmental Management (IDEM) of any deviation from, or changes in, the information in the application which would affect the Permittee's ability to comply with the applicable rules or permit conditions.

Pursuant to IC 13-15-5-3 and IC 4-21 5-3-5(f), this permit takes effect fifteen (15) days from receipt of this notice. If you wish to challenge this decision, IC 13-15-6-1 and IC 4-21.5-3-7 require that you file a Petition for Administrative Review. If you seek to have the effectiveness of the permit stayed during administrative review, you must also file a Petition for Stay. The petition(s) must be submitted to the Office of Environmental Adjudication, Government Center North, Room 501, 100 North Senate Avenue, Indianapolis, Indiana 46204, within fifteen (15) days after your receipt of this notice. The petition(s) must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision, or otherwise entitled to review by law. Identifying the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, or date of this notice will expedite review of the petition. Additionally, IC 13-15-6-2 requires that a Petition for Administrative Review must include:

- 1. The name and address of the person making the request.
- 2. The interest of the person making the request.
- 3. Identification of any persons represented by the person making the request.
- 4. The reasons, with particularity, for the request.
- 5. The issues, with particularity, proposed for consideration at the hearing.

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6. Identification of the terms of the permit which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing licenses of the type granted or denied by the Commissioner.

Pursuant to IC 4-21.5-3-1(f), any document serving as a petition for review or review and stay must be filed with the Office of Environmental Adjudication. Filing of such a document is complete on the earliest of the following dates:

- 1. the date on which the petition is delivered to the Office of Environmental Adjudication, Government Center North, Room 501, 100 North Senate Avenue, Indianapolis, Indiana 46204;
- 2. the date of the postmark on the envelope containing the petition, if the petition is mailed by United States mail; or
- 3. the date on which the petition is deposited with a private carrier, as shown by a receipt issued by the carrier, if the petition is sent by private carrier.

The portions of the permit for which a Petition for Stay has been filed will take effect at the expiration of the additional fifteen (15) day period unless or until an Environmental Law Judge stays the permit in whole or in part. This permit shall remain in effect until five (5) years from the effective date unless revoked and reissued, modified, or terminated (329 IAC 3.1-13-7), or continued in accordance with IC 13-15-6-3.

This permit terminates and supersedes any other State hazardous waste management permit.

2013 Issued this re/day of By

Wiffrey L. Sewell, Chief Permits Branch Office of Land Quality

## CRANE NAVAL SURFACE WARFARE CENTER CRANE, INDIANA IN5170023498

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<u>Attachments</u>

Part A Application

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- Section F. Procedures to Prevent Hazards
- Section G. Contingency Plan
- Section H. Personnel Training
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Attach	Section J. Section B. Section C. Section D. Section E. Section F. Section G. Section H. Section I. Section J.	Corrective Action for Solid Waste Management Units ral Storage Facility (CSF) Facility Description Waste Characteristics/Waste Analysis Plan Process Information Ground Water Monitoring Procedures to Prevent Hazards Contingency Plan Personnel Training Closure Plan Corrective Action for Solid Waste Management Units
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	Section G.	Contingency Plan
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Section J. Corrective Action for Solid Waste Management Units

Attachment V: Open Burning/Open Detonation (OB/OD)

- Section B. Facility Description
- Section C. Waste Characteristics/Waste Analysis Plan
- Section D. Process Information
- Section E. Ground Water Monitoring
- Section F. Procedures to Prevent Hazards
- Section G. Contingency Plan
- Section H. Personnel Training
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- Tables Exhibits
- Appendix 1: Contingency Plan and Emergency Procedures
- Appendix 2A: Ground Water Monitoring Plan
- Appendix 2B: Field Sampling and Analysis Plan
- Appendix 2C: Ground Water Monitoring Statistical Evaluation Plan (StEP)
- Appendix 2D: Ground Water Monitoring Quality Assurance Project Plan (QAPP)
- Appendix 2E: Ground Water and Surface Water Monitoring Criteria for Explosives

Tables, Figures and Exhibits associated with Attachments 0, I, II, III and IV are located after the Appendices

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#### I. STANDARD CONDITIONS

#### A. <u>EFFECT OF PERMIT</u>

The Permittee is allowed to treat and store hazardous waste in accordance with the conditions of the RCRA permit. Any treatment or storage of hazardous waste not authorized in this permit or the regulations is prohibited.

Pursuant to 329 IAC 3.1 and 40 CFR 260 through 270 (for HSWA Provisions), compliance with the conditions of this RCRA Permit generally constitutes compliance for purposes of enforcement, with the Indiana Environmental Management Act and RCRA, as amended by HSWA, except for those requirements not included in the Permit which become effective by statute, or which are promulgated under 329 IAC 3.1 and 40 CFR Section 260 through 270, restricting the placement of hazardous wastes in or on the land.

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 Federal, State, or local laws or regulations.

Compliance with the terms of this permit does not constitute a defense to any Order issued or any action brought under Section 3013 or Section 7003 of RCRA; Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 601), commonly known as CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. 9606(a)), commonly known as SARA, or any other law providing for protection of public health or the environment. (329 IAC 3.1-13; 40 CFR 270.4; IC 13)

#### B. <u>PERMIT ACTIONS</u>

This permit may be modified, revoked and reissued, or terminated for cause as specified in 329 IAC 3.1-13-7. The filing of a request by the Permittee 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.

#### C. <u>SEVERABILITY</u>

The provisions of the permit are severable, and if any provision of this permit, or

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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. In the event that a condition of this permit is stayed for any reason, all provisions of the permit severable from the stayed provisions shall take effect. With regard to stayed provisions of the permit, the Permittee shall continue to comply with the related applicable standards and relevant permitted standards in 329 IAC 3.1-9 and 329 IAC 3.1-15 from the previously issued permit until final resolution of the stayed condition, unless the Commissioner of the Indiana Department of Environmental Management (Commissioner) determines that compliance with the related applicable and relevant standards would be technologically incompatible with other conditions of this permit which have not been stayed. (329 IAC 3.1-13; 40 CFR 270.32)

## D. DUTIES AND REQUIREMENTS

- 1. <u>Duty to Comply.</u> The Permittee shall comply with all conditions of the RCRA permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit. Any permit noncompliance, other than noncompliance authorized by an emergency permit, constitutes a violation of IC 13 and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. (329 IAC 3.1-13; 40 CFR 270.30(a); 270.61)
- <u>Duty to Reapply.</u> The Permittee shall submit a complete application for a new permit at least 180 days before this permit expires unless: a) the Permittee no longer wishes to operate a hazardous waste management facility and all remaining corrective action obligations have been met; or, b) permission for submittal on a later date has been granted by the Commissioner. The Commissioner shall not grant permission for applications to be submitted later than the expiration date of the existing permit. (329 IAC 3.1-13; 329 IAC 3.1-13-3(h))
- 3. <u>Permit Expiration</u>. The duration of this permit shall not exceed five (5) years from the effective date of the permit, except as provided by 329 IAC 3.1-13-15. This permit and all conditions herein will remain in effect beyond the permit's expiration date if the Permittee has submitted a timely, complete application for a new permit and through no fault of the Permittee, the Commissioner has not issued a new permit with an effective date under 329 IAC 3.1-13-14 on or before the expiration date of the previous permit. (329 IAC 3.1-13-16)
- 4. <u>Need to Halt or Reduce Activity Not a Defense</u>. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to

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halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. (329 IAC 3.1-13; 40 CFR 270.30(c))

5. <u>Duty to Mitigate.</u> In the event of non-compliance with this Permit, the Permittee shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment. (329 IAC 3.1-13; 40 CFR 270.30(d))

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- 6. <u>Proper Operation and Maintenance.</u> The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit. (329 IAC 3.1-13; 40 CFR 270.30(e))
- 7. <u>Duty to Provide Information</u>. The Permittee shall furnish to the Commissioner, within a reasonable time, any relevant information which the Commissioner may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Commissioner, upon request, copies of records required to be kept by this permit. (329 IAC 3.1-13; 40 CFR 270.30(h); 264.74)
- 8. <u>Inspection and Entry.</u> Pursuant to 329 IAC 3.1-1-3 and 40 CFR 270.30(i), the Permittee shall allow the Commissioner, 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 (329 IAC 3.1-13; 40 CFR 270.30(i)(1));
  - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit (329 IAC 3.1-13; 40 CFR 270.30(i)(2));
  - c. Inspect, at reasonable times, any facilities, equipment (including

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monitoring and control equipment), practices, or operations regulated or required under this permit (329 IAC 3.1-13; 40 CFR 270.30(i)(3)); and

d. Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by IC 13, any substances or parameters at any location (329 IAC 3.1-13; 40 CFR 270.30(i)(4)).

#### 9. Monitoring and Reporting.

- a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the waste to be analyzed must be the appropriate method from 329 IAC 3.1-6; 40 CFR 261, Appendix I. Laboratory methods must be those specified in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, (Third Edition as amended by updates) (as referenced in 40 CFR 260.11); Standard Methods for the Examination of Water and Wastewater, (the 19th Edition, 1995); or an equivalent method as specified in the attached Waste Analysis Plan. (329 IAC 3.1-13; 40 CFR 270.30(j)(1))
- 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 and records required by this permit, and records of all data used to complete the application for this permit for a period of at least three (3) years from the date of the sample, measurement, report, or record or for a period of time greater than three (3) years as specified elsewhere in this permit. Corrective Action records must be maintained at least 3 years after all Corrective Action activities have been completed. These periods may be extended by request of the Commissioner at any time and are automatically extended during the course of any unresolved enforcement action regarding this facility. (329 IAC 3.1-13; 40 CFR 270.30(j)(2) and 40 CFR 264.74(b))
- c. Pursuant to 329 IAC 3.1-13; 40 CFR 270.30(j)(3), records of monitoring information shall include:
  - i. The date(s), exact place, and times of sampling or measurements;

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- ii. The individual(s) who performed the sampling or measurements;
- iii. The date(s) analyses were performed;
- iv. The individual(s) and laboratory who performed the analyses;
- v. The analytical technique(s) or method(s) used. Analytical technique(s) or method(s) is defined as encompassing both the sampling technique (method) and method of chemical analysis used. This information must be provided in the Waste Analysis Plan; and
- vi. The result(s) of such analyses, including QA/QC documentation.
- Monitoring results shall be reported to the Commissioner at the intervals specified elsewhere in this permit. (329 IAC 3.1-13; 40 CFR 270.30(I)(4))
- <u>Reporting Planned Changes.</u> The Permittee shall give notice to the Commissioner as soon as possible of any planned physical alterations or additions to the permitted facility. (329 IAC 3.1-13; 40 CFR 270.30(I)(1))
- <u>Certification of Construction or Modification</u>. Pursuant to 329 IAC 3.1-13; 40 CFR 270.30(I)(2), the Permittee may not treat, store or dispose of hazardous waste in a modified portion of the facility except as provided in 40 CFR 270.42 until:

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i.

- The Permittee has submitted to the Commissioner by certified mail or hand delivery a letter signed by the Permittee and a qualified professional engineer stating that the facility has been constructed or modified in compliance with the permit; and
  - The Commissioner has inspected the modified or newly constructed facility and finds it is in compliance with the conditions of the permit; or
  - ii. Within 15 days of the date of submission of the letter described in I.D.11.a., the Permittee has not received notice from the Commissioner of his or her intent to inspect, prior inspection is waived and the Permittee may commence treatment, storage, or disposal of hazardous waste.

- 12. <u>Transfer of Permits.</u> This permit may be transferred to a new owner or operator only if it is modified or revoked and reissued pursuant to 329 IAC 3.1-13; 40 CFR 270.40(b) or 40 CFR 270.41(b)(2) to identify the new Permittee and incorporate such other requirements as may be necessary under IC 13. 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 329 IAC 3.1 and IC 13, including all applicable corrective action requirements. (329 IAC 3.1-13; 40 CFR 270.40)
- 13. <u>Reporting Anticipated Noncompliance</u>. The Permittee shall give advance notice to the Commissioner of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. Such notification does not excuse the Permittee's duty to comply with permit requirements. (329 IAC 3.1-13; 40 CFR 270.30(I)(2))
- <u>Compliance Schedules</u>, Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date. (329 IAC 3.1-13; 40 CFR 270.30(I)(5))
- 15. <u>Twenty-four Hour Reporting.</u> The Permittee shall report to the Commissioner any noncompliance with the permit which may endanger health or the environment. Any such information shall be reported orally to IDEM 24 hour emergency telephone number 317/233-7745, within twentyfour (24) hours from the time the Permittee becomes aware of the circumstances. Pursuant to 329 IAC 3.1-13; 40 CFR 270.30(I)(6), this report shall include the following:
  - a. Information concerning the release of any hazardous waste which may endanger public drinking water supplies.
  - 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 hazards to the environment and human health outside the facility, where this is applicable; and
- vii. Estimated quantity and disposition of recovered material that resulted from the incident.

A written submission shall also be provided within five (5) days of the time the Permittee becomes aware of the circumstances. The written submission shall contain: a description of the noncompliance and its cause; the period of noncompliance (including exact dates and times); 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 Commissioner waives the requirement and the Permittee submits a written report within fifteen (15) days of the time the Permittee becomes aware of the circumstances.

- Other Noncompliance. The Permittee shall report all instances of noncompliance not otherwise required to be reported under Condition I.D.15., at the time monitoring reports, as required by this permit, are submitted. The reports shall contain the information listed in Condition I.D.15. (329 IAC 3.1-13; 40 CFR 270.30(I)(10))
- 17. <u>Other Information</u>. When the Permittee becomes aware that the facility failed to submit any relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Commissioner, the Permittee shall promptly submit such facts or information. (329 IAC 3.1-13; 40 CFR 270.30(I)(11))

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18. <u>Submittal of Reports or Other Information</u>. All reports or other information required to be submitted by the terms of this permit shall be sent to:

Indiana Department of Environmental Management Hazardous Waste Permit Section MC 66-20. IGCN 1101 100 N. Senate Avenue Indianapolis, IN 46204

- 19. All other requirements contained in 40 CER 270.30 not set forth herein are hereby fully incorporated in this permit.
- E. <u>SIGNATORY REQUIREMENT</u> All reports or other information requested by the Commissioner shall be signed and certified. (329 IAC 3.1-13; 40 CFR 270.11)
- F. <u>CONFIDENTIAL INFORMATION</u> The Permittee may claim confidential any information required to be submitted by this permit in accordance with 329 IAC 3.1-13-4, 329 IAC 6.1, and IC 13-14-11-1.

## G. WASTE MINIMIZATION

The Permittee shall certify at least annually that the Permittee has a program in place to reduce the volume and toxicity of hazardous waste that the Permittee generates to the degree determined by the Permittee to be economically practicable; and the proposed method of treatment, storage, or disposal is that practicable method currently available to the Permittee which minimizes the present and future threat to human health and the environment, in accordance with 40 CFR 264.73(b)(9) and Section 3005(h) of RCRA, 42 U.S.C. §6925(h). The certifications shall be recorded, as they become available, and maintained in the operating record.

- H. <u>DOCUMENTS TO BE MAINTAINED AT FACILITY SITE</u> Except as noted in the regulations, the Permittee shall maintain at the facility, until closure is completed and certified by the owner/operator and a qualified professional engineer, the following documents and amendments, revisions and modifications to these documents:
  - 1. Waste Analysis Plan as required by 329 IAC 3.1-9, 40 CFR 264.13 and this permit and any document(s) referenced therein to describe on-site procedures.
  - 2. Personnel Training documents and records as required by 329 IAC 3.1-9, 40 CFR 264.16(d) and (e) and this permit.

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3. Contingency Plan as required by 329 IAC 3.1-9, 40 CFR 264.53(a), and this permit.

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- 4. Closure Plan as required by 329 IAC 3.1-9, 40 CFR 264.112(a)(2), and this permit.
- 5. Cost estimate for facility closure as required by 329 IAC 3.1-15-3, and this permit.
- 6. Operating record as required by 329 IAC 3.1-9, 40 CFR 264.73, and this permit.
- 7. Inspection schedules as required by 329 IAC 3.1-9, 40 CFR 264.15(b)(2), and this permit.
- 8. Record of facility inspections, as required by 329 IAC 3.1-9, 40 CFR 264.15(d), and this permit, shall be maintained for at least three years.
- Copies of all manifests for shipments of hazardous waste received at and originating from this facility, as required by 329 IAC 3.1-7, 329 IAC 3.1-9-2(6) 40 CFR 262.40, 40 CFR 264.71, and this permit, shall be maintained for at least three years.
- 10. Notifications from generators subject to 40 CFR Part 268, Subtitle C, that specify treatment standards, as required by 40 CFR 264.73, 268.7, and this permit.
- 11. Waste minimization certifications must be part of the operating record as required by 40 CFR 264.73(b)(9).
- 12. Corrective Action reports and records as required by Permit Condition XI. of this permit. These reports and records must be maintained for at least 3 years after all Corrective Action Activities have been completed; and
- 13. Records regarding closed-vent systems and control devices and/or equipment leaks as required by Permit Condition X. of this permit.
- 14. Ground Water Monitoring Plan as required by 329 IAC 3.1-9, 40 CFR 264.97 and this permit and any documents referenced therein to describe on-site procedures.
- 15. Ground Water Monitoring Data as required by 329 IAC 3.1-9, 40 CFR 264.97 and this permit.

## II. GENERAL FACILITY CONDITIONS

A. <u>DESIGN AND OPERATION OF FACILITY</u> The Permittee shall maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.

## B. <u>REQUIRED NOTICE</u>

- (1) The Permittee shall notify the Commissioner in writing at least four (4) weeks in advance of the date the Permittee expects to receive hazardous waste from a foreign source. Notice of subsequent shipments of the same waste having the same EPA hazardous waste number from the same foreign source is not required. (329 IAC 3.1-9, 40 CFR 264.12(a))
- (2) When the Permittee is to receive hazardous waste from an off-site source (except where the Permittee is also the generator), it must inform the generator in writing that it has the appropriate permits for, and will accept, the waste the generator is shipping. The Permittee must keep a copy of this written notice as part of the operating record. (See Permit Condition II.K.1). (329 IAC 3.1-9, 40 CFR 264.12(b))
- (3) The Permittee may not receive hazardous waste from an off-site source, with the exceptions of:
  - (a) the condition in Section C-2e of Attachment 0.
  - (b) waste military munitions stored and handled in accordance with the Department of Defense Explosive Safety Board (DDESB) standards.
- C. <u>GENERAL WASTE ANALYSIS</u> The Permittee shall comply with the procedures described in Section C, Waste Analysis Plan in Attachments 0, I, II, III, IV and V, which are incorporated herein by reference.
- D. <u>SECURITY</u> The Permittee shall comply with the security provisions of 329 IAC 3.1-9 and 40 CFR 264.14(b) and (c) as described in Section F, Procedures to Prevent Hazards of Attachments 0, I, II, III, IV and V, which are incorporated herein by reference.
- E. <u>GENERAL INSPECTION REQUIREMENTS</u> The Permittee shall follow the inspection schedule in Section F, Procedures to Prevent Hazards in Attachments 0, I, II, III, IV and V. The Permittee shall remedy any deterioration or malfunction

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discovered by an inspection as required by 329 IAC 3.1-9 and 40 CFR 264.15(c). Records of inspections shall be kept as required by 329 IAC 3.1-9 and 40 CFR 264.15(d).

- F. <u>PERSONNEL TRAINING</u> The Permittee shall conduct personnel training as required by 329 IAC 3.1-9 and 40 CFR 264.16. This training program shall follow the attached outline in Section H, Personnel Training Plan in Attachments 0, I, II, III, IV, and V, which are incorporated herein by reference. The Permittee shall maintain training documents and records as required by 329 IAC 3.1-9 and 40 CFR 264.16(d) and (e).
- G. <u>GENERAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE</u> <u>WASTE</u> The Permittee shall comply with the requirements of 329 IAC 3.1-9 and 40 CFR 264.17.
- H. <u>PREPAREDNESS AND PREVENTION</u>
  - 1. <u>Required Equipment.</u> The Permittee shall equip the facility with the equipment set forth in the attached Contingency Plan, Appendix 1, which is incorporated herein by reference, and as required by 329 IAC 3.1-9 and 40 CFR 264.32.
  - Testing and Maintenance of Equipment. The Permittee shall test and maintain the equipment specified in the attached Contingency Plan, Appendix 1 (see the previous permit condition) as necessary to assure its proper operation in time of emergency. Such testing and maintenance activities are set forth in the inspection schedule in Section F, Procedures to Prevent Hazards in Attachments 0, I, II, III, IV, and V.
  - 3. <u>Access to Communications or Alarm System.</u> The Permittee shall maintain access to the communications or alarm systems as required by 329 IAC 3.1-9 and 40 CFR 264.34.
  - 4. <u>Required Aisle Space.</u> The Permittee shall maintain aisle space as required by 329 IAC 3.1-9 and 40 CFR 264.35.
  - 5. <u>Arrangements with Local Authorities.</u> The Permittee shall attempt to make arrangements with State and local authorities as required by 329 IAC 3.1-9 and 40 CFR 264.37. If State or local officials refuse to enter into preparedness and prevention arrangements with the Permittee, the Permittee must document this refusal in the operating record.

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## I. CONTINGENCY PLAN

- 1. <u>Implementation of Plan.</u> The Permittee shall immediately comply with the provisions of the Contingency Plan, Appendix 1, and follow the emergency procedures described by 329 IAC 3.1-9-2(4) and (5) and 40 CFR 264.56 whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which threatens or could threaten human health or the environment.
- 2. <u>Copies of Plan.</u> The Permittee shall comply with the requirements of 329 IAC 3.1-9 and 40 CFR 264.53.
- 3. <u>Amendments to Plan.</u> The Permittee shall review and immediately amend, if necessary, the Contingency Plan, as required by 329 IAC 3.1-9 and 40 CFR 264.54.
- 4. <u>Emergency-Coordinator.</u> The Permittee shall comply with the requirements of 329 IAC 3.1-9 and 40 CFR 264.55, concerning the Emergency Coordinator.
- J. <u>MANIFEST SYSTEM</u> The Permittee shall comply with the manifest requirements of 329 IAC 3.1-9, 40 CFR 264.71, 264.72, and 264.76.
- K. <u>RECORD KEEPING AND REPORTING</u> In addition to the record keeping and reporting requirements specified elsewhere in this Permit, the Permittee shall comply with the following record keeping and reporting requirements:
  - 1. <u>Operating Record</u>. The Permittee shall maintain a written operating record at the facility in accordance with 329 IAC 3.1-9 and 40 CFR 264.73.
  - 2. <u>Sampling and Analysis Records.</u> The Permittee shall keep original or exact copies of all sampling and analysis records. These records shall be available for inspection, in accordance with 329 IAC 3.1-9 and 40 CFR 264.74.
  - 3. <u>Biennial Report.</u> The Permittee shall comply with the biennial report requirements of 329 IAC 3.1-9 and 40 CFR 264.75.

## L. <u>CLOSURE</u>

1. <u>Performance Standard.</u> The Permittee shall close the facility as required by 329 IAC 3.1-9 and 40 CFR 264.111 and in accordance with Section I, Closure Plan in Attachments I, II, III, IV, and V, which are incorporated

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herein by reference.

- 2. <u>Amendment to Closure Plan.</u> The Permittee shall amend the Closure Plan in accordance with 329 IAC 3.1-9 and 40 CFR 264.112(c) whenever necessary, and whenever requested by the Commissioner in accordance with 40 CFR 264.112(c)(4).
- 3. <u>Notification of Closure.</u> Pursuant to 329 IAC 3.1-9 and 40 CFR 264.112(d) the Permittee shall notify the Commissioner in writing at least sixty (60) days prior to the date he expects to begin closure of a surface impoundment, waste pile, land treatment, or landfill unit, or final closure of a facility with such a unit. The Permittee must notify the Commissioner in writing at least forty-five (45) days prior to the date on which he expects to begin final closure of a facility with only treatment or storage tanks, container storage, incinerator, or miscellaneous treatment units to be closed.
- 4. <u>Time Allowed for Closure.</u> After receiving the final volume of hazardous waste, the Permittee shall treat or remove from the site all hazardous waste in accordance with the schedule specified in Section I, Closure Plan of Attachments I, II, III, IV, and V. After receiving the final volume of hazardous waste, the Permittee shall complete closure activities in accordance with the schedule specified in the Closure Plan.
- <u>Disposal and/or Decontamination of Equipment.</u> When closure is completed, the Permittee shall decontaminate and/or dispose of all facility equipment contaminated with hazardous waste as required by 329 IAC 3.1-9, 40 CFR 264.114 and Section I, Closure Plan of Attachments I, II, III, IV, and V.
- 6. <u>Certification of Closure</u>. When closure is completed, the Permittee and a qualified professional engineer shall certify to the Commissioner that the facility has been closed in accordance with the specifications in the Closure Plan as required by 329 IAC 3.1-9 and 40 CFR 264.115.

## M. LAND DISPOSAL RESTRICTIONS

- 1. The Permittee shall comply with all the applicable self-implementing requirements of 40 CFR Part 268 and all applicable land disposal requirements which become effective by federal statute.
- 2. The Permittee shall comply with the dilution prohibition requirements described in 40 CFR 268.3.

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- 3. The Permittee shall comply with all testing, tracking, and recordkeeping requirements for treatment facilities described in 40 CFR 268.7.
- 4. The Permittee shall comply with all the applicable prohibitions on storage of restricted wastes specified in 40 CFR 268 Subpart E.
- 5. If the Permittee applies to the administrator of the EPA for an exemption from land disposal restrictions described in 329 IAC 3.1-12-2, the Permittee must submit copies of such request and all supporting documents to the commissioner. If the Permittee obtains an exemption from the administrator of the EPA, the Permittee must apply to the commissioner for concurrence that such an exemption is consistent with the policies outlined in IC 13.

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## **III. CONTAINER STORAGE CONDITIONS**

## A. <u>WASTE IDENTIFICATION</u>

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- 1. The Permittee may store a total volume of 19,309 gallons of wastes which may contain free liquids in containers in Buildings 2993 and 2993A, and 106,920 gallons of wastes not containing free liquids in the Central Storage Facility (CSF) Outside Non-Liquid Hazardous Waste Storage Area subject to the terms of this permit. Hazardous wastes identified in Table C-2 may be stored subject to the terms of this permit.
- 2. The Permittee is prohibited from storing hazardous waste not identified in Table C-2
- B. <u>UNIT LOCATION</u> The container handling and storage facility is located at the Central Storage Facility as shown in the site plan in Attachment I.
- C. <u>CONDITION OF CONTAINERS</u> If a container holding hazardous waste is not in good condition (e.g., appreciable rusting, apparent structural defects) 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. (329 IAC 3.1-9 and 40 CFR 264.171)
- D. <u>COMPATIBILITY OF WASTE WITH CONTAINERS</u> The Permittee shall assure that the ability of the container to contain the waste is not impaired as required by 329 IAC 3.1-9 and 40 CFR 264.172.

## E. MANAGEMENT OF CONTAINERS

- 1. The Permittee shall manage containers as follows as required by 329 IAC 3.1-9 and 40 CFR 264.173.
  - (a) A container holding hazardous waste must always be closed during storage, except when it is necessary to add or remove waste.
  - (b) 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.
  - (c) Containers of thirty (30) gallons or more must be stored so that they can be inspected for leaks and for deterioration caused by corrosion or other factors, without having to move the containers during the

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inspection and must have adequate aisle space between rows (approximately two and one-half feet (2 1/2)) to facilitate inspection.

2. (a) The Permittee shall be allowed to "stage" incoming containerized wastes in designated areas. Incoming waste shall be placed in permitted units within 3 operating days of entering the facility boundary (or contiguous property controlled by the permittee) unless the permittee rejects all or part of the shipment. In the case of rejected loads the permittee shall have an additional sixty (60) days to ship the waste off-site to an alternate TSDF or to the generator, in accordance with the requirements of <u>40 CFR 264.72</u>. During this timeframe the Permittee must ensure that the rejected load is maintained in a secure location and clearly labeled. Operating day is defined as any 24 hour period during which at least a partial shift is worked by employees who process, treat, place into storage, or dispose of hazardous waste at the facility.

- (b) Containerized waste being transferred from one permitted unit to another (such as from container storage to tank storage) shall remain outside of permitted units only for the minimum time necessary to move the containers and transfer the waste. In no instance shall this transfer period exceed 8 hours.
- (c) The Permittee shall not have more than 126,229 gallons of containerized hazardous waste subject to this permit at the facility at any one time. All containers of waste at the facility shall be counted towards the permitted capacity including, but not limited to, containerized waste in trucks, in trailers, on the loading docks, in permitted storage units, and in processing areas.
- F. <u>CONTAINMENT</u> The Permittee shall construct, operate, and maintain the containment system in accordance with the requirements of 329 IAC 3.1-9 and 40 CFR 264.175 as specified in Section D, Process Information of Attachment I, which is incorporated herein by reference.
- G. <u>INSPECTION</u> 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 or other factors, as required by 329 IAC 3.1-9 and 40 CFR 264.174.
- H. <u>SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE</u> The Permittee shall not locate containers holding ignitable or reactive waste within fifteen (15) meters (fifty (50) feet) of the facility's property line, as required by 329

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IAC 3.1-9 and 40 CFR 264.176.

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#### I. SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTE

- 1. Prior to placing incompatible waste or incompatible waste and materials in the same container, the Permittee shall comply with 329 IAC 3.1-9 and 40 CFR 264.17(b) as specified in Section D, Process Information of Attachment I.
- 2. The Permittee shall not place hazardous waste in an unwashed container that previously held an incompatible waste or materials.
- 3. The Permittee shall separate containers of incompatible wastes as indicated in Section D, Process Information of Attachment I, as required by 329 IAC 3.1-9 and 40 CFR 264.177(c).
- 4. The Permittee must document compliance with Permit Condition III.I.3. as required by 329 IAC 3.1-9 and 40 CFR 264.17(c) and place this documentation in the operating record (Permit Condition II.K.1.).

## J. <u>CLOSURE REQUIREMENTS</u>

- 1. At closure, all hazardous waste and hazardous waste residues must be removed from the containment system. Remaining containers, liners, bases, and soil containing or contaminated with hazardous waste or hazardous waste residues must be decontaminated or removed, as required by 329 IAC 3.1-9 and 40 CFR 264.178, and in accordance with Section I, Closure Plan of Attachment I.
- 2. At closure, as throughout the operating period, unless the Permittee can demonstrate in accordance with 329 IAC 3.1-9 and 40 CFR 261.3(d) that the solid waste removed from the containment system is not a hazardous waste, the Permittee becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of 329 IAC 3.1 and 40 CFR 262 through 266. (329 IAC 3.1-9 and 40 CFR 264.178)
- 3. Upon certification by the owner/operator and an independent registered professional engineer that part or all of the storage facility has been properly closed, those provisions of this permit which allow for the continued operation of the closed portion of the facility are terminated. The amount of wastes allowed to be stored is reduced to reflect the partial closure of this facility. Waste types which were only authorized for storage at the closed portion of the facility are deleted from this permit.

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## IV. INCINERATOR CONDITIONS

## A. OPERATION AND MAINTENANCE

The Permittee must operate and maintain the Ammunition Peculiar Equipment 1236 incinerator in accordance with the Hazardous Waste Combustor (HWC) MACT standards pursuant to 40 CFR 63 Subpart EEE. These conditions also apply to non-hazardous solid wastes treated in these incinerators.

## B. LOCATION OF INCINERATORS

The Ammunition Peculiar Equipment 1236 incinerator is located as shown in Exhibit B-13.

## C. <u>PERFORMANCE STANDARD</u>

The Permittee must comply with the Hazardous Waste Combustor (HWC) MACT standards pursuant to 40 CFR 63 Subpart EEE for the Ammunition Peculiar Equipment 1236 incinerator. The incinerator feed system must be operated as described in Section D, Process Description of Attachment IV of this permit.

The Permittee must provide a copy of any comprehensive performance test plan to the Office of Land Quality, Permits Branch, at the time such CPT test plan is submitted to the Office of Air Quality. The Commissioner may require additional information in order to determine whether additional controls are necessary to ensure protection of human health and the environment in accordance with 40 CFR 270.10(l).

If, as the result of an assessment(s) or other information collected in accordance with 40 CFR 270.10(l), the Commissioner determines that conditions are necessary in addition to those required under 40 CFR parts 63, subpart EEE, or 264 to ensure protection of human health and the environment, he shall propose a modification to this permit to include those terms and conditions, in accordance with 40 CFR 270.32(b)(3).

## D. LIMITATIONS ON WASTES

The Permittee must incinerate only hazardous wastes as described in Table C-6 of this permit and non-hazardous solid wastes must be stored in compliance with 329 IAC 11-13.5-6.

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## E. CLOSURE REQUIREMENTS

- 1. At closure, the owner or operator must remove all hazardous waste and hazardous waste residues (including, but not limited to, ash, scrubber waters, and scrubber sludges) from each incinerator site in accordance with 329 IAC 3.1-9, 40 CFR 264.351 and Section I, Closure Plan of Attachment IV.
- 2. At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with 329 IAC 3.1-9 and 40 CFR 264.3(d) that the residue removed from the incinerator is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with applicable requirements of 329 IAC 3.1-7, 3.1-9, 3.1-10, 3.1-14, 3.1-15, 40 CFR 262 through 264. (329 IAC 3.1-9, 40 CFR 264.351)
- 3. Upon certification by the owner/operator and an independent registered professional engineer that part or all of this incinerator unit has been properly closed, those provisions of this permit which allow for the continued operation of the closed portion of the facility are terminated. Waste types which were only authorized for incineration in this particular unit at the closed portion of the facility are deleted from this permit. (329 IAC 3.1-9 and 40 CFR 264.115)

## V. CONTAINED DETONATION CHAMBER (CDC) CONDITIONS – MISCELLANEOUS TREATMENT UNIT

## A. FACILITY MAINTENANCE

The Permittee shall maintain the D-200 Contained Detonation Chamber (CDC) facility as described in Section D, Process Description of Attachment III of this permit.

No modification to the CDC and its air pollution control equipment shall be made which would affect the achievement of the performance standards in Permit Condition V.C. or any other permit conditions specified in this permit, without first obtaining written approval from the Commissioner.

## B. UNIT LOCATION

The location of the CDC is shown in Exhibit B-13.

## C. <u>PERFORMANCE STANDARD</u>

The Permittee shall maintain the CDC so that, when operated in accordance with the operating requirements specified in this permit, it will meet the following performance standards:

1. The CDC shall not have any release that may have an adverse effect on human health or the environment due to migration of waste constituents in the ground water, surface water, or air.

- 2. The CDC shall not emit particulate matter in excess of 180 milligrams per dry standard cubic meter when corrected for the amount of oxygen in the stack gas in accordance with the formula specified in 329 IAC 3.1-9 and 40 CFR 264.343(c).
- 3. Compliance with the operating conditions specified in this permit will be regarded as compliance with the above performance standards. The operating conditions will be established during the performance test that shows emissions are acceptable in accordance with the "Risk Equivalency Demonstration for the MPTS, CDC, and APE 1236 Incinerator". However, any evidence that compliance with such permit conditions is insufficient to ensure compliance with the above performance standards may be "information" justifying modification, revocation, or reissuance of the permit

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pursuant to 329 IAC 3.1-13-7.

#### D. LIMITATION ON WASTES

The Permittee must incinerate only hazardous wastes as described in Table C-6 of this permit and non-hazardous solid wastes not containing free liquids. All non-hazardous wastes must be stored in compliance with 329 IAC 11-13.5-6.

#### E. OPERATING CONDITIONS AND MONITORING

The Permittee shall place or detonate the wastes described in Permit Condition V.D. in the CDC only when the unit is operated as described in Attachment III and in accordance with the following conditions:

- 1. Hazardous waste shall not be placed in the CDC unless the CDC is operating in compliance with all conditions specified in this permit.
- 2. The Permittee shall prevent fugitive emissions from the CDC by ensuring that there are no leaks through which fugitive emissions may exit the unit. This is to be verified during the daily inspection while the equipment is operating. The daily visual inspection is required by 329 IAC 3.1-9, 40 CFR 264.602, and 40 CFR 264.347(b).
- 3. The Permittee shall record and maintain the monitoring and inspection data as required by 329 IAC 3.1-9, 40 CFR 264.602, and 40 CFR 264.347(d).

4. The Permittee shall record the feed rate to the CDC in an operations log. The feed rate will be limited to 100 lbs. net explosive weight (NEW) Comp. B (116 lbs. NEW TNT equivalent) per detonation for a suspended charge or 85 lbs. NEW Comp. B (98.6 lbs. NEW TNT equivalent) per detonation for a charge detonated on the shooting platform. The NEW includes the waste munition explosive, the donor charge, and the booster charge. The hourly feed rate limit is 750 lbs. NEW TNT. The risk based feed limits are 17,000 lbs. NEW per day and 3,400,000 lbs. NEW annually.

- 5. The CDC shall be purged during and following each detonation. The fan speed will remain at 100% for a three minute purge cycle and can then be reduced to 50% for operator entry into the chamber.
- 6. The expansion chamber shall be maintained at a pressure less than atmospheric pressure prior to detonation of waste. The specific pressure to be maintained from the D-200 testing ranges from -0.1 to -0.3 psig. This pressure shall be monitored and recorded continuously.

- 7. The pressure drop across the air filter cartridges shall be in the range 0-2 inches of water. The air filter pressure drop shall be maintained except when the door is open for placing waste for detonation. The air filter pressure drop shall be monitored and recorded continuously.
- 8. The Permittee must cease waste feed immediately when changes in waste feed, operating conditions, or monitored parameters cause the CDC to exceed limits prescribed in this permit.
- 9. The Permittee shall maintain a separate log of all permit based CDC shutdown events. This log will contain, at a minimum, the date and time of the event, the reason for stopping the waste feed, possible causes, action(s) taken to achieve operating within permit limits, and the name of the operator.
- 10. The Permittee shall submit a report for any month in which the waste feed is discontinued for any permit-related cause. The report shall include for each event the date and time; possible causes; actions taken; and the time waste feed resumed. Each report is due within thirty (30) days of the last day of each month.
- 11. Upon request of the Commissioner, the Permittee shall perform the test required by 329 IAC 3.1-9, 40 CFR 264.601, and 40 CFR 264.347(a)(3).

## F. <u>CLOSURE REQUIREMENTS</u>

- 1. At closure, the owner or operator must remove all hazardous waste and hazardous waste residues (including, but not limited to, fly ash and bottom ash) from the CDC site in accordance with 329 IAC 3.1-9, 40 CFR 264.351 and Section I, Closure Plan of Attachment III.
- 2. At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with 329 IAC 3.1-9 and 40 CFR 264.3(d) that the residue removed from the CDC is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with applicable requirements of 329 IAC 3.1-7, 3.1-9, 3.1-10, 3.1-14, 3.1-15, 40 CFR 262 through 264. (329 IAC 3.1-9, 40 CFR 264.351)
- 3. Upon certification by the owner/operator and an independent registered professional engineer that part or all of the CDC unit has been properly closed, those provisions of this permit which allow for the continued operation of the closed portion of the facility are terminated. Waste types which were only authorized for detonation in this particular unit at the closed portion of the facility are deleted from this permit. (329 IAC 3.1-9 and 40 CFR 264.115)

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## VI. SUPER PULL APART MACHINE CONDITIONS MISCELLANEOUS TREATMENT UNIT

## A. <u>GENERAL</u>

The Ammunition Peculiar Equipment 2271, Super Pull Apart Machine (SPAM) is a demilitarization processing line for small caliber ammunition. It removes the projectile (for recovery, recycling, or further processing), recovers the propellant (for recycling or disposal), initiates the primer, and inspects the cartridge. The SPAM is configured to process 50 caliber, 20 mm, 25 mm, 30 mm, and 40 mm cartridges.

The line includes ancillary feed equipment prior to a continuous-motion pull-apart turret that separates the projectiles from the cartridge case filled with propellant. The projectile is containerized for treatment, or reclaimed for reuse. The cartridge cases continue to a dump cubical where they are inverted so the propellant drops out and is collected for recycling or for disposal at the OB/OD facility. The empty case with the primer then continues on to the primer firing module where the primer is functioned. Empty cartridge cases with expended primers are collected for recycling.

Emissions are controlled individually from the functioning enclosure, the propellant conveying system, and the SPAM enclosure.

No modification to the SPAM and its air pollution control equipment shall be made which would affect the achievement of the performance standards in Permit Condition VI.C. or any other permit conditions specified in this permit, without first obtaining written approval from the Commissioner.

## B. UNIT LOCATION

The location of the SPAM is in Building 146 – Bay 5, in the central portion of the CRANE facility, shown in Exhibit B-1.

## C. <u>PERFORMANCE STANDARD</u>

The Permittee shall operate and maintain the SPAM as described in Attachment II in order to meet the following performance standards:

1. The SPAM shall not have any release that may have an adverse effect on human health or the environment due to migration of waste constituents in the ground water, surface water, or air.

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2. Empty cases with the primer shall be processed through the primer firing module as they are generated from the propellant recovery operation. Primers that are not initiated in the first pass shall be run through the process again, for up to three additional passes, until they are initiated. Any primers that are not initiated shall be accumulated and processed in the APE 1236 incinerator or another appropriate permitted unit.

## D. LIMITATION ON WASTES

The Permittee must process in the SPAM only hazardous wastes listed in Table V.C-1a, Attachment II, of this permit.

## E. OPERATING CONDITIONS AND MONITORING

The Permittee may process the wastes described in Permit Condition VI.D. in the SPAM only when the unit is operated as described in Attachment II and in accordance with the following conditions:

- 1. Hazardous waste shall not be placed in the SPAM unless the SPAM is operating in compliance with all conditions specified in this permit.
- 2. The Permittee shall prevent fugitive emissions from the SPAM by ensuring the dust containment and popper station enclosures are maintained at a pressure less than atmospheric while operating the unit. This is to be verified during the daily inspection while the equipment is operating.
- 3. The Permittee shall record and maintain the monitoring and inspection data as required by 329 IAC 3.1-9, 40 CFR 264.602, and 40 CFR 264.347(d).
- 4. The Permittee must record the amount of cartridges processed in the SPAM and the amount and destination of wastes generated in an operations log. The number of primers found during inspection to have not initiated must also be recorded.
- 5. The Permittee shall maintain a separate log of all permit based SPAM shutdown events. This log will contain, at a minimum, the date and time of the event, the reason for stopping the waste feed, possible causes, action(s) taken to achieve operating within permit limits, and the name of the operator.
- 6. The Permittee shall submit a report for any month in which the waste feed is discontinued for any reason other than a normal, scheduled shutdown. The report shall include for each event the date and time; possible causes;

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actions taken; and the time waste feed resumed. Each report is due within thirty (30) days of the last day of each month.

7. Upon request of the Commissioner, the Permittee shall perform the test required by 329 IAC 3.1-9, 40 CFR 264.601, and 40 CFR 264.347(a)(3).

## F. <u>CLOSURE REQUIREMENTS</u>

- 1. At closure, the owner or operator must remove all hazardous waste and hazardous waste residues from the SPAM unit in accordance with 329 IAC 3.1-9, 40 CFR 264.351 and Section I, Closure Plan, of Attachment II.
- 2. At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with 329 IAC 3.1-9 and 40 CFR 264.3(d) that the residue removed from the SPAM is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with applicable requirements of 329 IAC 3.1-7, 3.1-9, 3.1-10, 3.1-14, 3.1-15, 40 CFR 262 through 265. (329 IAC 3.1-9, 40 CFR 264.351)
- 3. Upon certification by the owner/operator and an independent registered professional engineer that part or all of the SPAM unit has been properly closed, those provisions of this permit which allow for the continued operation of the closed portion of the facility are terminated. Waste types which were only authorized for initiation in this particular unit at the closed portion of the facility are deleted from this permit. (329 IAC 3.1-9 and 40 CFR 264.115)

## VII. OPEN BURNING/OPEN DETONATION (OB/OD) CONDITIONS – MISCELLANEOUS UNITS

## A. WASTE IDENTIFICATION

1. Ammunition Burning Ground (ABG)

The Permittee may treat the types of wastes listed in Table V.C-3 at the Ammunition Burning Ground (open burning unit), subject to the terms of this permit.

2. Old Rifle Range (ORR)

The Permittee may treat the types of wastes listed with the unit symbol PA in Table V.C-1 at the Old Rifle Range (open burning unit), subject to the terms of this permit.

3. Demolition Range (DEMO/DR)

The Permittee may treat the types of wastes listed in Table V.C-2 at the Demolition Range (open detonation unit), subject to the terms of this permit.

- 4. The Permittee shall not dispose or treat any liquid hazardous wastes directly on or in the ground.
- 5. The Permittee may treat wastes generated from on-site processes as well as other Department of Defense (DOD) military installations, military contractors, foreign military munitions used by DOD within the United States or United States Territories as allowed under 40 CFR 266 Subpart M. Propellant/explosive/pyrotechnic (PEP) items confiscated by law enforcement agencies or voluntarily transferred to the DOD by the general public for safe disposal may be accepted provided the wastes may be properly treated at the units as allowed by this permit and 10 USC 2692. The Permittee must notify the Commissioner of the waste source, volumes and types prior to accepting the off-site waste except in the case of a Level 1 explosives or munitions emergency response as allowed for under the Military Munitions Rule Implementation Policy.
- 6. The Permittee must submit notification to IDEM prior to open burning or open detonation of small-caliber ammunition or any other waste stream permitted by IDEM, and facility-approved for incineration or contained detonation. The notification must include a description and the anticipated quantity of each waste to be treated. The Permittee must also provide a
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quarterly report that lists each waste stream and identifies the quantity of each waste stream actually treated.

7. The permittee must provide monthly notification to the Commissioner of any waste treated onsite by the Explosive Ordinance Detachment.

## B. LOCATION INFORMATION

a.

The ABG, ORR, and DR are located in the area shown in Exhibit B-1.

## C. <u>DESIGN, CONSTRUCTION AND OPERATION</u>

- 1. The design, construction, and operation of the OB/OD units shall be as presented in Section D, Process Information of Attachment V, the Ground Water Monitoring Plan, and 40 CFR 261.31, so as to prevent the migration of any constituents into the ground water, surface water, and soil.
- 2. The Permittee may treat the quantities of reactive wastes in each unit as specified below subject to the terms of this permit. Treatment rates are based on the Final Air Emissions Human Health Risk Assessment, incorporated herein by reference, and may be more restrictive than as specified in Table V.B-1. Additional operational requirements are listed in Attachment V. Compliance with these treatment rates shall be documented in the operating record.
  - Units 3a, 3b, or 3c-ABG may open burn up to ten pans of either 1500 pounds net explosive weight propellant or propellant production scrap or 500 pounds net explosive weight of bulk explosive or explosive scrap per pan per event. Only one sub-unit may operate at any time. These units are limited to five treatment events per day.
  - Unit 4-ABG may open burn a pan containing up to 50 lbs. tetryl and 75 gallons of acetone per event, limited to two treatment events per day. Unit 5-ABG may open burn one pan of up to 100 gallons of contaminated ignitable liquid per event, limited to three treatment events per day. Only one of these units may operate at any time.
  - c. Unit 6-ABG may open burn up to eight pans of up to 100 pounds net explosive weight of a mixture of red phosphorous and No. 2 fuel oil per pan per event, limited to two treatment events per day.
  - d. Unit 7-ABG may open burn one pan of up to 100 pounds net explosive weight of scrap pyrotechnics desensitized in No. 2 fuel oil per event,

limited to two treatment events per day.

- e. Unit 8-ABG may open burn one pan of up to 125 pounds net explosive weight of scrap black powder desensitized in water per event, limited to two treatment events per day.
- f. Unit 9-ABG may open burn on two concrete pads up to 100 pounds net explosive weight PEP contaminated materials per pad per event, limited to two treatment events per day.
- g. Units 10 and 11-ABG may open burn dewatered, air-dried sludge consisting of either up to two pans of 1000 lbs. net explosive weight of contaminated sludge or a single pan of 200 lbs. net explosive weight of red phosphorus sludge per event, limited to one treatment event per day. The maximum treatment rate is 10,000 gallons of sludge per month.
- h. Unit 12-ABG may open burn up to 300 pounds net explosive weight of small explosives such as hand grenade fuses and cartridge primers in two pans per day.
- Unit 13-ABG may open burn up to 50,000 pounds net explosive weight of pyrotechnic devices and components in a caged burn box per day. This unit shall not operate at the same time as any of the unit 3-ABG sub-units. If operated on the same day as any unit 3-ABG subunit, the daily treatment limit for each unit is reduced proportionally.
  - Unit 3a-ORR may treat up to 6,000 pounds net explosive weight of bulk ammonium picrate or liquids contaminated with ammonium picrate per day. Unit 3b-ORR may open burn up to 5,000 pounds net explosive weight projectiles or liquids contaminated with ammonium picrate per day.
- Unit 3-DR may open detonate up to seventy (70) pits of up to 500 pounds <u>net</u> explosive weight ammunition or explosives per event. Each pit shall be 6 to 12 feet deep and the waste is to be covered with 6 to 12 feet of earth.
- 3. The open burning activities shall not be conducted if the following conditions exist. Compliance shall be documented in the operating record for each event.
  - a. During electrical storms, thunder storms, or periods of precipitation.

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Den burning shall not be initiated should wind speed exceed 15 miles per hour or fall below 3 miles per hour. The addition of items for open burning in the incendiary cage (13-ABG) and the primer pit (12-ABG) shall not be continued should the wind speed exceed 15 miles per hour or fall below 3 miles per hour.

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- c. Open burning shall not be initiated and/or continued should winds carry a visible emissions plume beyond the facility's fence line or expose operators to emissions.
- d. Open burning shall not be conducted during periods of reduced visibility (less than 1 mile).
- e. Open burning shall not be conducted on overcast days (more than 80 percent cloud cover) with a cloud ceiling of less than 2,000 feet.
- 4. The Permittee shall not exceed the listed treatment quantities for OB/OD units found in Section D, Process Information of Attachment V and Table V.B-1.
- 5. The Permittee shall comply with the waste compatibility requirements of 40 CFR 264.17(b).
- 6. Collected residuals must be managed in accordance with the design plans and reports contained in Section D, Process Information of Attachment V.
- 7. The Permittee shall operate and maintain run-on and run-off surface water control systems per Section D, Process Information of Attachment V, and the Ground Water Monitoring Plan.
- 8. The Permittee shall empty or otherwise manage any collection and holding facilities in order to maintain the design capacity of the system in accordance with 40 CFR 264.301(i).
- 9. The Permittee shall cover or otherwise manage the open burning units to control wind dispersal if at present or at any future time the open burning facilities contain any particulate matter that may be subject to wind dispersal in accordance with 40 CFR 264.301(j) and Section D, Process Information of Attachment V.

## D. MONITORING AND INSPECTION

- 1. The Permittee shall inspect the units as specified in Section F, Procedures to Prevent Hazards of Attachment V and in accordance with the inspection schedules contained therein. (40 CFR 264.15 and 40 CFR 264.303(b))
- 2. The Permittee shall maintain adequate fire protection equipment to assure the confinement and control of any fire resulting from OB/OD operations as specified in Section F, Procedure to Prevent Hazards of Attachment V.
- 3. The Permittee shall comply with the Clean Water Act permitting requirements to maintain, operate, and inspect the run-off control ponds at the DR.

## E. SURVEYING AND RECORDKEEPING

The Permittee shall maintain the following items in the operating record as required by 40 CFR 264.73:

- 1. A permanently surveyed benchmark on the facility property with the location of the benchmark entered on the appropriate drawings.
- 2. On a map, the exact locations of the units and monitoring wells, with respect to permanently surveyed benchmarks.

## F. <u>CLOSURE AND POST-CLOSURE</u>

1. At final closure of the burning grounds, or upon closure of any burning unit, or closure of the DR, or part of the range, the Permittee shall follow the procedures outlined in Section I, Closure Plan of Attachment V. The Permittee shall attempt to clean-close as much of the burning operations as possible. Should ground water contamination remain, the unit shall require closure as a landfill. The DR may attempt to clean-close portions, but it is unlikely that all contaminated soil could be removed; therefore, the unit should be closed as a landfill.

The Permittee shall utilize the landfill closure standards of 40 CFR 264, Subpart N.

- 2. At final closure as a landfill, the Permittee must cover the landfill with final cover as specified in Section I, Closure Plan of Attachment V, which is designed and constructed to:
  - a. Provide long term minimization of migration of liquids through the

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closed landfill;

C.

- b. Function with minimized maintenance;
- c. Promote drainage and minimize erosion or abrasion of cover;
- d. Accommodate settling and subsidence so that the cover's integrity is maintained; and
- e. Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.

If partial clean-closure is met, an alternative cap design may be approved by the Commissioner.

- 3. After final closure, the Permittee must follow the plans and procedures in the approved Post-Closure Care Plan in Section I of Attachment V, until a Post-Closure Permit is issued. After closure, the Permittee must comply with all post-closure requirements contained in 40 CFR 264.117 through 40 CFR 264.120, including maintenance and monitoring throughout the post-closure care period. The Permittee must:
  - a. Maintain the integrity and effectiveness of the final cover, including making repairs to the cover as necessary to correct the effects of settling, subsidence, erosion, or other events;
  - b. Maintain and monitor the ground water monitoring system and comply with all other requirements of 40 CFR 264 Subpart F;
    - Prevent run-on and run-off from eroding or otherwise damaging the final cover; and
  - d. Protect and maintain surveyed benchmarks used in complying with 40 CFR 264.310.

## VIII. GROUND WATER MONITORING CONDITIONS -DEMOLITION RANGE (DR)

## A. <u>GENERAL DESCRIPTION OF THE GROUND WATER MONITORING SYSTEM</u> <u>AND THE UPPERMOST AQUIFER</u>

The Demolition Range (DR) consists of multiple buried detonation chambers throughout a ridge system used to explode old munitions. According to a map constructed by Erik Kvale (1992) of the Indiana Geological Survey, this system is composed of the Pennsylvanian Mansfield formation, which is located just above the Pennsylvanian-Mississippian unconformity. The uppermost aquifer has two ground water monitoring zones. The ground water monitoring system consists of a network of 11 wells. Four of the wells are for monitoring the upper Mansfield and Mississippian Golconda/Haney aquifer. The other seven wells are for monitoring the lower Mississippian Big Clifty/Beech Creek aquifer. The top of well screens vary in depth from 10 feet to 22.5 feet for the upper zone and 49.5 feet to 82 feet for the deep zone. The upper zone well screens are 10 feet long. The well screens for the deep zone vary between 10 and 20 feet long.

## B. <u>DETERMINATION OF THE TYPE MONITORING PROGRAM; 40 CFR 270.14(c)(6)</u> AND 264.99

Statistically significant increases of hazardous constituents have occurred in the uppermost aquifer at the point of compliance. The Commissioner must establish a ground water protection standard (GWPS) in the facility permit when hazardous constituents have been detected in the ground water. Therefore, the Permittee must implement a compliance monitoring program per 40 CFR 264.99 semiannually throughout the remainder of the compliance period identified in Permit Condition VIII.E. The Permittee must comply with the conditions specified in this permit that are designed to ensure that hazardous constituents of Permit Condition VIII.C. detected in the ground water from the DR do not exceed the concentration limits of Permit Condition VIII.D in the uppermost aquifer underlying the waste management area beyond the point of compliance as defined in Permit Condition VIII.F. during the compliance period as defined in Permit Condition VIII.E.

## C. HAZARDOUS CONSTITUENTS; 40 CFR 264.93

The hazardous constituents to which the GWPS applies includes the following:

 The Permittee must collect ground water samples from the monitoring wells specified in Permit Condition VIII.G. to be analyzed for Appendix IX constituents identified in Table 9-3 of the *Ground Water Monitoring Plan* ((GWMP) (VFC # 67479361)) in Appendix 2A of this permit.

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- 2. As specified at Permit Condition VIII.H.2., the Permittee must determine what hazardous constituents are present in the ground water at what concentrations by accepting the initial results of the Appendix IX scan of Permit Condition VIII.C.1. or resampling for verification within fifteen (15) days.
- 3. The Permittee must determine whether additional hazardous constituents from Appendix IX, which could possibly be present but are not on the detection monitoring list in the permit, are actually present in the uppermost aquifer and if so, at what concentration. The Permittee must add any hazardous constituent that has been determined to be present in the ground water as a result of the Appendix IX sampling to Table 9-2 and establish a GWPS for the additional constituents per Permit Condition VIII.D. The Permittee must report the concentration of these additional constituents to the Commissioner with seven (7) days after the completion of the second analysis.
- 4. The Permittee's hazardous constituent list must at a minimum consist of the metals and explosives as listed in Table 9-2 of the GWMP.

## D. GROUND WATER PROTECTION STANDARD (GWPS); 40 CFR 264.94

- 1. Alternate Concentration Limits (ACLs) for the GWPS may be utilized. The approved ACLs are referenced in Tables 1-2 and 1-3 in the GWMP. The applicable ACL values must be utilized as the GWPS.
- 2. Unless an ACL is established, the GWPS must be the established background for the metals and any hazardous constituent that was previously detected in accordance with the statistical methods discussed in Permit Condition VIII.J.
- 3. If additional hazardous constituents without a background value for comparison are detected that are not naturally occurring, then a GWPS must be established within thirty (30) days.

#### E. <u>COMPLIANCE PERIOD; 40 CFR 264.96</u>

The compliance period must continue until the Commissioner accepts certification of closure.

## F. POINT OF COMPLIANCE (POC); 40 CFR 270.14(c)(3) AND 264.95

The POC is expressed at wells 06C03P2, 06C04P2, and 06C06P2 for the Golconda/Haney aquifer and the POC is expressed at wells 06C02, 06C03, 06C04, 06C05, 06C06, and 06C07 for the Big Clifty/Beech Creek aquifer.

#### G. <u>WELL LOCATION AND MAINTENANCE; 40 CFR 270.14(c)(5), 270.14(c)(6)(ii),</u> 264.97(a), 264.97(b) and 264.99(b)

- 1. The Permittee's ground water monitoring system for compliance must consist of background monitoring wells 06C08P2 for the Golconda/Haney aquifer and 06C08 for the Big Clifty/Beech Creek aquifer and compliance wells 06C03P2, 06C04P2, 06C06P2 for the Golconda/Haney aquifer and 06C02, 06C03, 06C04, 06C05, 06C06, and 06C07 for the Big Clifty/Beech Creek aquifer.
- The Permittee must inspect and maintain the monitoring wells in accordance with the schedule and procedures described in standard operating procedure (SOP) 1 of the *Field Sampling Plan* ((FSP) (VFC # 67479348)) in Appendix 2B of this permit. The monitoring well locations are shown in Figure 9-1 of the GWMP.
- 3. If it is determined that an existing monitoring well cannot yield representative samples, then the Permittee must replace the monitoring well within thirty (30) days, and submit a Class 1 Permit Modification meeting the requirements of 40 CFR 270.42. This modification must be submitted to the Commissioner within seven (7) days after the change is put into effect. The replacement monitoring well must meet the same depth, design and material specifications as the existing monitoring well, and be located within a <u>10</u>-foot radius of the existing monitoring well.
- 4. If the Permittee replaces an existing monitoring well, then the Permittee must abandon the well per 312 IAC 13-10-2.
- 5. The Permittee must construct new wells as needed in accordance with Permit Condition VIII.G.3. Detailed construction logs for existing wells are shown in Section 4, Appendix A to the FSP.
- 6. The Permittee must submit to the Commissioner a report on the progress of any new borings, new or replacement wells, well removals, well repairs, or well developments, within sixty (60) days of completion. Reports must describe the work performed, including, but not limited to, well as-built diagrams, boring logs, sample analytical results, well development data,

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hydraulic conductivity testing data, surveyed elevation data and any other pertinent information.

## H. <u>SAMPLING AND ANALYSIS PROCEDURES; 40 CFR 270.14(c)(6)(iv) and</u> 264.97(d), (e)

- 1. The Permittee must semiannually obtain and analyze samples from the ground water monitoring wells specified in Permit Condition VIII.G.1. using the techniques, procedures and equipment described in Section 4.2 of the FSP and in accordance with SOP 5 of the FSP for sample collection, preservation, shipment, chain-of-custody and analysis.
- 2. The Permittee must annually determine if additional hazardous constituents have been released into the ground water by the procedures stated in Permit Conditions VIII.C.1. and VIII.C.2.

## I. GROUND WATER ELEVATION; 40 CFR 264.97(f) and 264.99(e)

- 1. The Permittee must determine the ground water elevation in each ground water monitoring well as specified in Section 4.2 and SOP 2 of the FSP each time ground water is sampled. Using this information, the Permittee must determine the hydraulic head difference, and the direction and rate of ground water flow in the unconsolidated aquifer unit beneath the DR. The Permittee must submit the results of these determinations to the Commissioner by March 1 of the following year. The Permittee may use other monitoring wells or observation wells for the determination of ground water flow rate and direction with prior approval from the Commissioner.
- 2. The Permittee must submit a Class 2 Permit Modification if the ground water flow direction evaluation under Permit Condition VIII.1.1. indicates that the monitoring wells no longer adequately monitor the compliance point as defined by the management waste boundary. This proposal must be submitted to the Commissioner ninety (90) days before any changes are made to the ground water monitoring system.

## J. <u>BACKGROUND DETERMINATIONS; 40 CFR 270.14(c)(6)(iii), 264.97(g) and</u> 264.99(c)

The Permittee must establish background in accordance with the Statistical Evaluation Plan ((StEP) (VFC # 67479349)) located in Appendix 2C of this permit for any current hazardous constituent or future hazardous constituent that is added to the ground water constituent list as a result of Appendix IX sampling performed at the background monitoring wells listed in Permit Condition VIII.G.1.

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## K. STATISTICAL PROCEDURES; 40 CFR 270.14(c)(6)(iv), 264.97(h) and 264.99(d)

- 1. The Permittee must perform statistical comparisons of compliance well data to background data for constituents that are naturally occurring. Constituents that are not naturally occurring must be compared directly to the GWPS established by Permit Condition VIII.D.
- 2. Semiannually and throughout the compliance period, the constituent analytical result for each sample collected at each downgradient compliance well must continue to be individually compared to the statistical limit calculated for background.
- 3. A summary of the statistical evaluation procedures to be used are described in the StEP.
- L. <u>REPORTING, RECORD KEEPING AND RESPONSE; 40 CFR 264.97(j), and</u> 264.99(h), 329 IAC 3.1-9-2(7)
  - 1. If upon completion of sampling, the analytical results at any compliance point monitoring well(s) exceed the statistical criteria or the GWPS, the Permittee must:
    - (a) Notify the Commissioner of this finding in writing within seven (7) days. The notification must indicate all constituents and their associated results that have exceeded the statistical criteria or the GWPS.
    - (b) Submit to the Commissioner an application for a permit modification to establish a corrective action program meeting the requirements of 40 CFR 264.100 within 180 days. The application must at a minimum include the following:
      - a detailed description of corrective actions that will achieve compliance with the GWPS.
      - ii. a plan for a ground water monitoring program that will demonstrate the effectiveness of the corrective action. Such a ground water monitoring program must be based on the compliance monitoring program.
  - 2. The analytical results at any compliance point monitoring well(s) and any verification analyses or 40 CFR 264 Appendix IX analyses, including deliverable requirements of Section 3 of the Quality Assurance Project Plan

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((QAPP)(VFC # 67479350)), must be submitted to the IDEM within sixty (60) days of receipt of the final laboratory technical report unless delays beyond the Permittee's control occur; in which case, the IDEM must be notified with the reason for delay within the sixty (60) day period. The Permittee must submit two paper copies of the laboratory analytical results and associated statistics for each required ground water sampling event obtained to the IDEM, addressed to:

Hazardous Waste Permits Section Chief Indiana Dept. of Environmental Management Office of Land Quality, Permits Branch 100 N. Senate Ave., IGCN 1101 Indianapolis, IN 46204-2251

- 3. The Permittee must submit an electronic report of the laboratory analytical results and field parameters for each required ground water sampling event to the IDEM within sixty (60) days following receipt of the results from the laboratory. The electronic report must be in the required format, which is available at the IDEM website, and submitted to the official IDEM website for electronic data submittal currently described at: <a href="http://www.in.gov/idem/programs/land/datasubmittal/digdatasubmittal.html">http://www.in.gov/idem/programs/land/datasubmittal.html</a>. If this location changes then the permit must be changed accordingly without the necessity for a modification.
- M. If the Permittee determines that the compliance monitoring program no longer satisfies the requirements of this section, then, within ninety (90) days, the Permittee must submit an application for a permit modification to make any appropriate changes to the program.

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## IX. GROUND WATER MONITORING CONDITIONS AMMUNITION BURNING GROUNDS (ABG)/OLD JEEP TRAIL (OJT) AND OLD RIFLE RANGE (ORR)

#### A. <u>GROUND WATER MONITORING PROGRAM</u>

Two of the permitted Subpart X units at Crane, the Ammunition Burning Grounds and the Old Rifle Range, have ground water contamination from other sources that interfere with traditional ground water monitoring such as is being conducted at the Demo Range. 40 CFR 264.90(f) provides the option of an alternative ground water monitoring program in cases such as these. This section of the permit conditions outlines the alternative ground water monitoring program for these two units. In the event that ground water monitoring under 40 CFR 264.90(f) is discontinued for any reason during the operational life of the Ammunition Burning Ground or the Old Rifle Range, ground water monitoring will resume under 40 CFR 264.99.

Many elements of this plan, such as sampling methods, quality control, and analytical methods, are identical to those used for the traditional program outlined for the Demo Range, so to avoid duplication this section will outline the elements that are unique to these units. The primary difference is the statistical plan. Subpart F monitoring under 40 CFR 264.99 is looking for statistical evidence of releases, where 264.90(f) assumes there have been releases and looks for changes in concentrations that might indicate a new release or might result in an exceedance of the ground water or surface water protection standards.

Significant elements of the monitoring plan are:

- A table listing screening criteria for explosives in surface water and ground water is provided in Appendix 2E.
- Maps showing the sampling locations within the units are in the GWMP figures
  7-1 and 8-1, and in the Field Sampling Plan figures 3-1 and 3-2.
- Tables listing wells and constituents are in the Field Sampling Plan. The information for the ABG is in Table 4-3, and the ORR is in Table 4-6.

#### B. GROUND WATER MONITORING SYSTEM

#### 1. <u>Monitoring System</u>

The ground water monitoring program for these two units is covered in detail in the Ground Water Monitoring Plan (GWMP), Field Sampling Plan (FSP), and the Quality Assurance Project Plan (QAPP), which are included in this permit as Appendices 2A, 2B, and 2D.

#### 2. <u>Operation and Maintenance</u>

The Permittee will operate and maintain the ground water monitoring system as outlined in the Ground Water Monitoring Plan located in Appendix 2A to this permit.

#### 3. Installation of Monitoring Wells

In the event that new, or replacement, monitoring wells are necessary, the Permittee will submit a written request for a permit modification to authorize a change to the approved ground water monitoring system. The Permittee will consult with IDEM and seek approval prior to initiating any well installation program or other substantive changes in the monitoring network or program.

## C. <u>SAMPLING PROCEDURE</u>

The Permittee will use the sampling procedures described in the Ground Water Monitoring Plan to collect, preserve, and control all ground water and surface water samples.

## D. FREQUENCY FOR COLLECTING SAMPLES AND CONDUCTING EVALUATIONS

The Permittee will follow the sampling and evaluation program outlined in the Ground Water Monitoring Plan in Appendix 2A, 2B, and 2D.

## E. STATISTICAL EVALUATIONS

The Permittee will determine whether there is statistically significant evidence of increased contamination for each hazardous constituent that exceeds the relevant

protection standards for that constituent in each monitoring location.

## F. DETECTION OF AN INCREASING CONCENTRATION TREND

If the Permittee determines, pursuant to Permit Condition IX.E., that there is an increasing trend in the concentration of any constituent the Permittee will:

1. <u>Provide Notification</u>

Notify the Commissioner of this finding in writing within fourteen (14) days. The notification will indicate what concentration limit(s) has (have) been exceeded.

2. Submit A Corrective Action Plan

Submit a corrective action plan to address the increase within 60 days of discovery of the exceedance.

## G. PERMIT MODIFICATIONS

If the Permittee determines that the monitoring program no longer satisfies the requirements for monitoring outlined in Permit Condition IX. the Permittee must, within 90 days, submit an application for a permit modification to make any appropriate changes to the program.

## H. RECORD KEEPING AND REPORTING

Within sixty (60) days from receipt of the final laboratory technical report for each routine or verification ground water sampling event, the Permittee will enter the results of each ground water sampling event into the facility record. Additionally, a complete ground water report (one hard copy and one digital copy) will be submitted annually.

All analytical data from required ground water sampling events must be submitted to OLQ within sixty (60) days of each sampling event. This submittal must include one (1) original unbound laboratory certified report with field sheets and chain of custody forms; and one (1) electronic version of the analytical results with the field parameters including pH, specific conductance, dissolved oxygen, Eh, temperature, well depth, depth to water, and static water elevation.

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The electronic version must be on a Compact Disc; or may be submitted via electronic mail (e-mail) to the e-mail address, <u>olqdata@idem.in.gov</u>. The facility name and a brief description of the file contents should be clearly marked on the digital media or typed in the subject heading of the e-mail. The electronic version should be submitted as an ASCII, tab-delimited text file and contain the facility's name and permit number. Field parameters and analytical results must include the fields listed below:

- 1. Sampling Date: Month, day, and year
- 2. Well Name: Include permitted and corrective action wells
- 3. Sample Type: Regular, duplicate(s), trip blank(s), equipment blank(s), field blank(s), verification re-sample(s) and replicate(s)
- 4. Sample Medium: Ground water, leachate, soil, surface water, etc.
- 5. Species Name: Chloride, sodium, ammonia, etc.
- 6. Concentration (results)
- 7. Concentration Units: mg/l, ug/l, standard units for pH, degrees Celsius (°C), or degrees Fahrenheit (°F) for temperature, mvolts for Eh, and umhos/cm for specific conductance
- 8. Detected: Yes or no
- 9. Detection Limit
- 10. Analytical Methods
- 11. Estimated Value: Indicate "Yes" if the reported value is an estimated value. If a value is estimated, use the "Comment" field to explain why the value was estimated
- 12. Comment: Analytical lab and/or field personnel comments regarding the reported results.

Electronic document submittal guidelines for groundwater data can be found at http://www.in.gov/idem/5384.htm

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## X. AIR EMISSIONS CONDITIONS

#### A. <u>CONTAINERS</u>

The Permittee shall comply with all applicable requirements of 40 CFR Part 264, Subpart CC, regarding air emission standards for containers.

#### B. <u>RECORDKEEPING</u>

The Permittee shall comply with all applicable recordkeeping and reporting requirements described in 40 CFR 264.1089 and 264.1090.

## C. DUTY TO COMPLY WITH FUTURE REQUIREMENTS

The Permittee shall comply with all self-implementing provisions of any future air regulations promulgated by RCRA, as amended by HSWA.

#### XI. CORRECTIVE ACTION CONDITIONS

#### A. <u>STANDARD REQUIREMENTS</u>

#### 1. <u>Corrective Action At The Facility</u>

In accordance with Section 3004(u) of RCRA (Indiana Code 13-22-2-5) and the regulations promulgated pursuant thereto, the Permittee must institute Corrective Action as necessary to protect human health and the environment for all releases of hazardous waste(s) or hazardous constituent(s) from any solid waste management unit (SWMU) or area of concern (AOC) at the facility, regardless of the time the waste was placed in such units.

The Permittee may use the principles and procedures set forth in IDEM's 2012 Remediation Closure Guide, and all revisions and additions thereto, or other risk-based methodologies approved by IDEM's Office of Land Quality Permits Branch, as the basis for selecting risk-based endpoints that will be used for the investigations, studies, interim measures, and corrective measures under the permit. The Permittee shall perform all such work in a manner consistent with, at a minimum, the Remediation Closure Guide.

#### 2. Corrective Action Beyond The Facility Boundary

In accordance with Section 3004(v) of RCRA (Indiana Code 13-22-2-5) and the regulations promulgated pursuant thereto, the Permittee must implement Corrective Action(s) beyond the facility property boundary, where necessary to protect human health and the environment, unless the Permittee demonstrates to IDEM's satisfaction that, despite the Permittee's best efforts, the Permittee was unable to obtain the necessary permission to undertake such actions. The Permittee is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where off-site access is denied. On-site measures to address such releases will be addressed under the RCRA Facility Investigation, Corrective Measures Study, and Corrective Measures Implementation phases, as determined to be necessary on a case-by-case basis.

#### 3. Notification

#### a. Field Activities

The Permittee shall notify IDEM at least seven (7) days before engaging in any field activities, such as well drilling, installation of equipment, or sampling. At the request of IDEM, the Permittee shall provide IDEM or its authorized representative split samples of all samples collected by the Permittee pursuant to this permit. Similarly, at the request of the Permittee, IDEM shall allow the Permittee or its authorized representatives to take split or duplicate samples of all samples collected by IDEM under this permit.

b. Submittals

One (1) copy and one (1) PDF copy on CD of all reports, plans, and other submissions relating to or required by this permit shall be sent to:

Indiana Department of Environmental Management Hazardous Waste Permit Section MC 66-20. IGCN 1101 100 N. Senate Avenue

Indianapolis, IN 46204

## B. IDENTIFICATION OF SWMUs

1. <u>Definitions</u>

b.

a. "Area of Concern (AOC)" means a unit or area that could potentially produce unacceptable exposures or be a potential source of ground water contamination, but the unit or area does not meet the definition of a solid waste management unit.

"Facility" means all contiguous property under the control of the owner/operator of a facility seeking a permit under Subtitle C.

- "Hazardous waste," as defined in IC 13-11-2-99, means a solid waste or combination of solid wastes that may cause or significantly contribute to an increase in: mortality, serious irreversible illness, or an incapacitating reversible illness; or pose a substantial present or potential hazard to human health or the environment. This term is further defined in 40 CFR Part 261.3.
- d. "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.
- e. "Release" means any spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of hazardous wastes or hazardous constituents into the

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environment, including the abandonment or discarding of barrels, containers, and other closed receptacles containing hazardous wastes or hazardous constituents.

- f. "Solid waste" means any garbage, refuse, sludge, or other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, or agricultural operations or from community activities. This term is further defined in 40 CFR Part 261.2.
- g. "Solid Waste Management Unit (SWMU)" means any discernable unit, permitted or unpermitted, existing or historical, at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released.
- 2. <u>SWMUs and AOCs Requiring Corrective Action</u>

Based on the information contained in the administrative record, corrective action is required at the SWMUs and AOCs listed in Section J of Attachment 0. A map showing the location of these SWMUs and AOCs is given in Exhibit J-1.

3. <u>Coordination with U.S. EPA</u>

Permittee has been undertaking corrective action measures at 33 Solid Waste Management Units (SWMU) under the auspices of its 1995 U.S. EPA permit. The 1995 U.S. EPA permit established the Hazardous and Solid Waste Amendment (HSWA) Corrective Action Requirements and Compliance Schedules obligating the U.S. Navy to perform RCRA Facility Investigations (RFIs) at 33 SWMUs, to conduct Corrective Measures Studies, and to implement corrective measures if needed. As the State of Indiana has been authorized to administer this program in lieu of U.S. EPA, Permittee's ongoing corrective actions at the SWMUs will continue under the "U.S. EPA/IDEM Work Sharing Agreement for Corrective Actions Activities at Naval Surface Warfare Center-Crane Division" and the "Naval Surface Warfare Center Crane Division Partnering Implementation Agreement of July 2000" between the U.S. Navy, U.S. EPA, and IDEM.

## C. NEWLY IDENTIFIED SWMUs OR RELEASES

1. Notification Requirements

The Permittee shall notify IDEM, within thirty (30) days of discovery, of the following information requirements for any new SWMU identified at the facility, in accordance with 329 IAC 3.1-13-1 and 40 CFR 270.14(d):

- a. the location of the unit on the site topographic map;
- b. designation of the type of unit;
- c. general dimensions and structural description (supply any available drawings);
- d. when the unit was operated; and
- e. specifications of all waste(s) that have been managed at the unit.
- 2. <u>Release Information</u>

The Permittee must submit to IDEM, within thirty (30) day of discovery, all available information pertaining to any release of hazardous waste(s) or hazardous constituent(s) from any new or existing SWMU.

## 3. <u>Corrective Action</u>

IDEM will review the information provided in Condition XI.C.1. and 2. above, and may as necessary, require further investigations or corrective measures. The Permittee shall submit a written RFI Workplan to the Section Chief of the Hazardous Waste Permit Section in accordance with Condition XI.D.2.

## D. CORRECTIVE ACTION ACTIVITIES

The major tasks and required submittal dates are shown below. Additional tasks and associated submittal dates may also be specified in the Corrective Action Activities Schedule (Condition XI.F.).

- 1. Interim Measures (IM)
  - a. The Permittee may undertake interim measure activities to prevent or minimize the further spread of contamination while long-term

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remedies are pursued. An IM Workplan shall be submitted to IDEM for approval before the Permittee initiates any remedial activity. The interim measure(s) must be capable of being integrated into any long-term solution at the facility.

b. In the event the Permittee identifies an immediate threat to human health or the environment, the Permittee shall immediately notify the Section Chief orally and in writing within seven (7) days summarizing the immediacy and magnitude of the potential threat to human health or the environment.

Upon receiving this information, IDEM will determine if an IM Workplan is necessary. If one is necessary, the Section Chief will send a notice to the Permittee requiring the submission of an IM Workplan. Within twenty-one (21) days after receiving this notice, the Permittee shall submit to the Section Chief a workplan for approval that identifies the interim measure(s).

The workplan should be consistent with and integrated into any long-term solution at the facility. In addition, the following Interim Measure schedule shall be initiated:

- Within five (5) days, the Permittee shall provide an alternate water supply to parties that have a contaminated water supply well;
  - Within seven (7) days, the Permittee shall submit a report to the Section Chief detailing the activity pursued and a plan for further Interim Measures activity;
- iii. Within seven (7) days following the Section Chief's transmission of comments, the Permittee shall revise the plan in accordance with the comments; and
- v. Within seven (7) days following IDEM's approval or modification of the plan, the Permittee shall implement the revised plan in accordance with the schedule therein.

#### 2. RCRA Facility Investigation (RFI)

i

ii.

The Permittee shall conduct an RFI to thoroughly evaluate the nature and extent of the release of hazardous waste(s) and hazardous constituent(s) from all SWMUs and AOCs identified as requiring an RFI.

#### a. <u>RFI Workplan</u>

The Permittee shall submit a written RFI Workplan to the Section Chief within ninety (90) days after written notification by the Section Chief that further investigation is necessary.

IDEM will approve, modify and approve, or disapprove and provide comments on the Workplan in writing to the Permittee. Within sixty (60) days of receipt of such comments, the Permittee shall provide a response to IDEM's comments.

#### b. <u>RFI Implementation</u>

Within thirty (30) days of IDEM's written approval of the RFI Workplan, the Permittee shall implement the plan according to the terms and schedule contained therein.

#### c. <u>RFI Report</u>

Within ninety (90) days after the completion of the RFI, the Permittee shall submit an RFI Report to the Section Chief. The RFI Report shall describe the procedures, methods, and results of the RFI. The report must contain adequate information to support further corrective action decisions at the facility. After the Permittee submits the RFI Report, IDEM shall either approve or disapprove the report in writing. If IDEM disapproves the report, the Section Chief shall notify the Permittee in writing of the deficiencies. The Permittee has sixty (60) days after receipt of IDEM's comments to submit a revised RFI Report to the Section Chief.

#### 3. Determination of No Further Action

#### a. Permit Modification

After completion of the RFI, and based on its results and other relevant information, the Permittee may submit an application to the Section Chief for a permit modification under 40 CFR 270.42 to terminate the corrective action tasks of the Corrective Action Activities Schedule for all or a portion of the facility. Tasks identified in Permit Condition XI.F. for the SWMUs, solid waste management areas (a group of SWMUs in an area to be addressed as a single unit), and/or the AOCs identified in the modification (for a determination of no further action) shall be stayed pending a

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decision by IDEM. This permit modification must conclusively demonstrate that there are no releases of hazardous waste(s), including hazardous constituents, from SWMUs or AOCs at the facility that pose a threat to human health or the environment.

If, based upon review of the Permittee's request for a permit modification, the results of the completed RFI, and other information, IDEM determines that releases or suspected releases that were investigated either are nonexistent or do not pose a threat to human health or the environment, IDEM will grant the requested modification.

#### b. <u>Further Investigations</u>

A determination of no further action shall not preclude IDEM from requiring further investigations, studies, or remediation at a later date, if new information or subsequent analysis indicates that a release or likelihood of a release from a SWMU or AOC at the facility is likely to pose a threat to human health or the environment. In such a case, IDEM shall initiate a modification to the Corrective Action Activities Schedule to rescind the determination made in accordance with Condition XI.D.3.a. Additionally, IDEM may determine that there is insufficient information on which to base a determination, and may require the Permittee to perform additional investigations as needed to generate the needed information.

#### 4. <u>Corrective Measures Study (CMS) and Remedy Selection</u>

If IDEM determines, based on the results of the RFI and other relevant information, that corrective measures are necessary, the Section Chief will notify the Permittee in writing that the Permittee shall conduct a CMS. The purpose of the CMS is to develop and evaluate the corrective action alternative(s) that will satisfy the performance objectives specified by IDEM. The CMS shall be conducted within sixty (60) days of notification by the Section Chief that the CMS is required. This period of time may be extended by the Section Chief if necessary to adequately complete the CMS. Note that this process can be significantly shortened by the selection of presumptive remedies (i.e., remedies that are known to be effective). Additional tasks and associated submittal dates may also be specified in the Corrective Action Activities Schedule (Condition XI.F.).

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#### a. <u>CMS Report</u>

Within sixty (60) days after the completion of the CMS, the Permittee shall submit a CMS Report to the Section Chief. The CMS Report shall summarize the results of the investigations for each remedy studied and must include an evaluation of each remedial alternative. After the Permittee submits the CMS Report, IDEM shall either approve, modify and approve, or disapprove the Report. If IDEM disapproves the Report, the Section Chief shall notify the Permittee in writing of the deficiencies. The Permittee has sixty (60) days after receipt of IDEM's comments to submit a revised CMS Report to the Section Chief. The CMS Report, as approved, becomes an enforceable condition of this permit.

#### b. <u>CMS Remedy Selection</u>

IDEM will select a corrective measure for implementation based on the following factors. The corrective measure selected for implementation must: (1) be protective of human health and the environment; (2) attain media cleanup standards; (3) control the source(s) of releases so as to reduce or eliminate further releases of hazardous waste(s) (including hazardous constituent(s)); (4) minimize the transfer of contamination from one environmental medium to another; and (5) comply with all applicable standards for management of wastes.

If two or more of the corrective measures studied meet the threshold criteria set out above, IDEM will choose among alternatives for Corrective Measures Implementation by considering remedy selection factors including: (1) long-term reliability and effectiveness; (2) the degree to which the corrective measure will reduce the toxicity, mobility or volume; (3) the corrective measure's short-term effectiveness; (4) the corrective measure's implementability; and (5) the relative cost associated with the alternative. In selecting the corrective measure(s), IDEM may also consider such other factors as may be presented by site-specific conditions.

#### 5. <u>Permit Modification</u>

Within thirty (30) days of IDEM's selection of a corrective measure, IDEM or the Permittee will initiate a permit modification, pursuant to 40 CFR 270.41 or 40 CFR 270.42, respectively, for the implementation of the corrective measure(s) selected. No permit modification fees are required

for any modifications submitted under this condition.

#### 6. <u>Corrective Measures Implementation (CMI)</u>

- a. If the corrective measure(s) recommended in the Corrective Measures Study Report is (are) not the corrective measure(s) selected by IDEM after consideration of public comments, the Section Chief shall inform the Permittee in writing of the reasons for such decision. Thirty (30) days after the effective date of the permit modification, the Permittee shall implement the corrective measure(s).
- b. Financial Assurance

As part of the permit modification of this permit to incorporate the CMI, the Permittee shall provide financial assurance in the amount specified in IDEM-approved CMS Report as required by 40 CFR 264.101(b) and (c).

7. Incorporation of plans and reports

All approved plans and reports prepared for this permit shall be incorporated into this permit on the date the Section Chief or his/her designee approves such plan or report.

## E. DISPUTE RESOLUTION

- If IDEM disapproves or modifies and approves any submission required by Condition XI. of the permit, IDEM shall provide the Permittee with a written notice setting forth the reasons for the disapproval or modification and approval.
- 2. If the Permittee disagrees, in whole or in part, with any written decision concerning IDEM's disapproval or modification and approval of any submission required by Condition XI. of the permit, the Permittee shall notify IDEM of the dispute. The Permittee and IDEM shall informally, and in good faith, endeavor to resolve the dispute.
- If the Permittee and IDEM cannot resolve the dispute informally, the Permittee may pursue the matter formally by submitting a written statement of position to the Commissioner or his/her designee, within twenty-eight (28) days of receipt of IDEM's written disapproval or modification and approval. The Permittee's statement of position shall set forth the specific

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matters in dispute, the position that the Permittee asserts should be adopted as consistent with the requirements of the permit, the basis for the Permittee's position, and shall include any supporting documentation. If the Permittee fails to follow any of the requirements contained in this paragraph, then it shall have waived its right to further consideration of the disputed issue. IDEM decision to discontinue further consideration under this condition shall constitute a final agency action.

- 4. IDEM and the Permittee shall have an additional fourteen (14) days from the date of the Commissioner's receipt of the Permittee's statement of position to meet or confer to attempt to resolve the dispute. This time period may be extended by IDEM for good cause. If agreement is reached, the Permittee shall submit a revised submission, if necessary, and shall implement the submission in accordance with such agreement.
- 5. If IDEM and the Permittee are not able to reach agreement within the 14day period, or such longer period corresponding to IDEM's extension for good cause, the Permittee may submit any additional written arguments and evidence not previously submitted, or further explain any arguments or evidence previously submitted, to the Commissioner. Based on the record, the Commissioner, or delegate, will thereafter issue a written decision that shall include a response to the Permittee's arguments and evidence. This written decision will constitute final agency action.
- 6. Notwithstanding the invocation of this dispute resolution procedure, the Permittee shall proceed to take any action required by those portions of the submission and of the permit that IDEM determines are not substantially affected by the dispute. The activity schedule for those portions of the submission and of the permit which are substantially affected by the dispute shall be suspended during the period of dispute resolution.

## F. CORRECTIVE ACTION ACTIVITIES SCHEDULE

## **Activity**

- 1. IM Workplan
- 2. RFI Workplan
- 3. Notification of newly identified SWMUs

## Due Date

21 days after notice by the Section Chief or his/her designee

90 days after notice by the Section Chief or his/her designee

30 days after discovery

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- 4. RFI Workplan for newly identified SWMUs
- 5. RFI Workplan modification
- 6. RFI Implementation
- 7. RFI Report
- 8. RFI Report Modification
- 9. Progress Reports on Tasks I through IV (See Corrective Action Scope of Work)
- 10. CMS Report
- 11. CMS Report modification
- 12. Permit Modification for Corrective Measure Implementation
- 13. CMI Program Plan
- 14. CMI Program Plan Modification
- 15 CMI Reports
- 16. CMI Report Modification
- 17. Operation and Maintenance

- 90 days after receipt of Section Chief's notification
- 60 days after receipt of Section Chief's comments
- 30 days after RFI Workplan approved
- 90 days after completion of RFI
- 60 days after receipt of Section Chief's comments
- Semi-annually; to coincide with ground water reporting if possible
- 60 days after receipt of Section Chief's notification
- 60 days after receipt of Section Chief's comments
- 30 days after receipt of Section Chief's notification (Modification may be a Class 1, 2, or 3 at Section Chief's discretion)
- 30 days after effective date of permit modification
- 30 days after receipt of Section Chief's comments
- Semi-annually; to coincide with ground water reporting if possible
- 30 days after receipt of Section Chief's comments
- Semi-annually; to coincide with ground

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Progress Reports

water reporting if possible

IDEM may, at the facility's request, grant extensions to the time frames listed in this section. IDEM-approved time extensions will not require a permit modification.

## G. FORCE MAJEURE

"Force Majeure," for purposes of this Permit, is defined as any event arising from causes beyond the control of the Permittee that delays or prevents the performance of any obligation under this Permit despite Permittee's best efforts to fulfill the obligation. The requirement that the Permittee exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure event as it is occurring and best efforts to address the effects of any potential force majeure event as it is occurring and following the potential force majeure event, such that the delay is minimized to the greatest extent possible. "Force Majeure" does not include financial inability to complete the work required by this Permit nor any increases of costs to perform the work.

The Permittee shall notify IDEM by calling within three (3) calendar days and by writing no later than seven (7) calendar days after any event which the Permittee contends is a force majeure. Such notification shall describe the anticipated length of the delay, the cause or causes of the delay, the measures taken or to be taken by the Permittee to minimize the delay, and the timetable by which these measures will be implemented. The Permittee shall include with any notice all available documentation supporting its claim that the delay was attributable to a force majeure. Failure to comply with the above requirements shall preclude the Permittee from asserting any claim of force majeure for that event. The Permittee shall have the burden of demonstrating that the event is a force majeure. The decision of whether an event is a force majeure shall be made by IDEM. Said decision shall be communicated to the Permittee.

If a delay is attributable to a force majeure, IDEM shall extend, verbally or in writing, the time period for performance under this Permit by the amount of time that is attributable to the event constituting the force majeure. Any final determination by IDEM under this section shall be reviewable under IC 4-21.5. However, if the Permittee appeals an IDEM decision concerning force majeure, such appeal shall not toll the accrual of penalties during the review of that appeal.

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## XII. COMPLIANCE SCHEDULE CONDITIONS

- A. Within 60 days of the effective date of this permit, the Permittee shall submit to IDEM a Risk Assessment demonstrating that emissions from facility treatment units are protective of human health and the environment.
- B. Fifteen (15) days prior to beginning storage of any hazardous waste in the Building 3435 container storage unit, the Permittee must submit a Certification of Construction as required by Permit Condition I.D. 11

# **ATTACHMENT 0**

## INTRODUCTION

**Revised August 2018** 

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#### **ATTACHMENT 0: INTRODUCTION**

The hazardous waste storage, handling, treatment, and disposal operations at the Naval Support Activity (NSA) Crane, hereinafter referred as CRANE, are governed by the permit issued by the Indiana Department of Environmental Management (IDEM) under the Resource Conservation and Recovery Act (RCRA).

Separate attachments are provided for each storage or treatment operation, plus this Introduction. The INTRODUCTION provides an overview of the permit and contains those elements of the permit that are common to all RCRA operations. For example, this INTRODUCTION provides a general description of CRANE, the overall traffic patterns for the site, waste characterization plans and methods, an overview of the contingency plan (although the detailed contingency plan will be maintained as a separate document to allow annual review and updates), and personnel training. Other attachments include the details of each storage or treatment operation. In all cases, the same framework is used in each of the following attachments:

Attachment I	Central Storage Facility (CSF)
Attachment II	Super Pull-Apart Machine (SPAM)
Attachment III	Contained Detonation Chamber (CDC)
Attachment IV	Ammunition Peculiar Equipment (APE) Incinerator (1236)
Attachment V	Open Burning/Open Detonation (OBOD) Area

Each of these attachments follows the same order of information from the RCRA permit review checklist, with all sections included. If an individual subsection is not germane to the storage or treatment operation, there is a notation to that effect. In this way, there is clarity about the applicability of requirements to the various operations at CRANE.

#### PART A APPLICATION A.

The Part A application precedes this Attachment.

#### B. FACILITY DESCRIPTION

#### **B-1** General Description

CRANE is situated on a 62,463-acre tract of land in southwest Indiana. It is located in the northern part of Martin County and extends into neighboring Daviess, Greene and Lawrence Counties. **Exhibit V.A-1.4** contains the CRANE site map.

Its mission is to, "Provide quality and responsive engineering, technical and material support to the Fleet for combat, subsystems, equipment and components; Microelectronics Technology, Microwave Components, Electronic Warfare, Acoustic Sensors Test, Electrochemical Power Systems, Conventional Ammunition Engineering Pyrotechnics, Small Arms, Electronic Module Test and Repair, Electronic Warfare, as assigned by Commander, Naval Sea Systems Command." Under the Single Service Management Program, a segment of CRANE's mission is to provide support (including environmental protection) to the Crane Army Ammunition Activity (CAAA). The Army is tasked with the production and renovation of conventional ammunition and related items; the performance of manufacturing, engineering, and product quality assurance to support production; and the storage, shipment and/or demilitarization and disposal of conventional ammunition and related components. Because of the nature of the Army's operations, CAAA contributes significant financial support for the environmental program through an Interservice Support Agreement.

Approximately 3,750 people are employed at CRANE in 8 departments and ten tenant activities. Additionally, the CAAA employs about 550 personnel. CRANE engages these people in a variety of processes and functions to accomplish the missions of the Navy and Army. Hazardous wastes are generated during this mission accomplishment. These wastes are generated, treated and/or stored at CRANE for off-site disposal.

CRANE has seven TSD facilities subject to RCRA permitting requirements:

- 1) Central Storage Facility (Buildings 2993, 3435, and ancillary exterior lot),
- 2) Super Pull-Apart Machine (SPAM),
- 3) Contained Detonation Chamber (CDC),
- 4) Ammunition Peculiar Equipment Incinerator (APE 1236),
- 5) Ammunition Burning Ground (ABG),
- 6) Old Rifle Range (ORR), and
- 7) Demolition Range (DR).

The Indiana Department of Environmental Management and U.S. Environmental Protection Agency issued **PERMIT IN5170023498** (Part B Application) in August 1995, which governed activities at the Central Storage Facility (CSF). The Subpart X facilities (ABG, ORR, and DR) were added to this permit number when that permit was issued separately on January 13, 2000. A Class III Modification was made to the Part B Permit in September 2004, adding the MPTS, CDC, and APE 1236 hazardous waste treatment units. The MPTS underwent closure and was certified closed on June 19, 2015. A Class III Modification was made in November 2017 to add the Super Pull-Apart Machine (SPAM).

#### B-2 (a&b) Topographic Map/General Requirements

Requirements	Location
Topographic Map	
Entire Crane Facility	Exhibit V.A-1.4

Legal Boundaries	
Entire Crane Facility	Exhibit V.A-1.4
Access Control	
Entire Crane Facility	Exhibit V.B-13
Surface Waters Including Intermittent Streams	
Entire Crane Facility	Exhibit V.A-1.4
Surrounding Land Use	
Entire Crane Facility	Exhibit B-14
Windrose (Relevant to all units/facilities) Fire Control Facilities, Proposed, New, and Existing Hazardous Waste Mgmt. Units	Exhibit B-11
Entire Crane Facility	Exhibit V.B-13
Solid Waste Management Units	
Entire Crane Facility	Exhibit J-1
100-year Floodplain	
Entire Crane Facility	Not Applicable
Injection/Withdrawal Wells	
Entire Crane Facility	Not Provided
Building, Structures within 1,000 ft.	
Entire Crane Facility	Not Provided
Sewers (Storm, sanitary, process)	
Entire Crane Facility	Not Provided
Loading and Unloading Areas	
Entire Crane Facility	Not Provided
Barriers for Drainage or Flood Control	
Entire Crane Facility	Not Applicable
<b>Operational Units in HWM Facility Locations</b>	
Entire Crane Facility	Not Applicable

The various requirements of 40 Code of Federal Register (CFR) §270.14(b)(19) are shown on different maps due to the size of CRANE. Topography specific to each site is covered in each Attachment so that specific topographic features of each site can be described as it pertains to the operations at each treatment or storage location. All maps show orientation, date, and scale. However, some information presented pertains to CRANE at large.

- **Exhibit V.A-1.4** depicts the legal boundaries of the installation. Individual topographic quadrant maps are used for each such quadrant aboard CRANE.
- **Exhibit B-11** depicts the installation Wind Rose.
- <u>Exhibits B-10</u> and <u>V.B-12</u> depict the watersheds and drainage area boundaries at CRANE.

#### B-3 Location Information (Seismic/Floodplain)

CRANE is located in Martin, Greene, Lawrence, and Daviess Counties, Indiana. The seismic considerations of 40 CFR 264.18 do not apply to this Permit, because 40 CFR, Appendix VI (Political

Jurisdictions in which compliance with 3-41-9 must be demonstrated) does not list these counties as seismic sensitive locations. Therefore, the requirements of 40 CFR 264.18, "Demonstration of Compliance with the Seismic Standard", do not apply to this Permit.

The 100-year floodplain map is shown in <u>Exhibits B-10</u> and <u>B-13</u>. The floodplain information was taken from Flood Insurance Maps, published by the Federal Emergency Management Agency (FEMA). Watershed maps are also included in <u>Exhibits B-10</u> and <u>V.B-12</u>.

The applicability of the floodplain provisions of 40 CFR §264.18(a) are provide in each Attachment. None of the areas in this permit are located in the 100-year floodplain, as described in each Attachment. The drainage basins within which the operations are located are summarized as follows:

Central Storage Facility	Lake Greenwood basin
Super Pull-Apart Machine	Lake Greenwood basin
Contained Detonation Chamber	Boggs & Turkey Creek basin
Ammunition Peculiar Equipment Incinerator (1236)	Boggs & Turkey Creek basin
Open Burning/Open Detonation Area: ABG	Sulphur Creek basin
Open Burning/Open Detonation Area: ORR	Turkey Creek basin
Open Burning/Open Detonation Area: DR	Boggs & Turkey Creek basin

#### **B-4** Traffic Information

#### B-4a Traffic Patterns

Movement of the waste inventory items of this Permit will be over existing CRANE roads. The current traffic circulation system at Crane consists of 177 miles of paved highway and 230 miles of gravel road. Paved roads service the production and operational support and provide the major east-west (Highway 5/45) and north south (Highway 45/161) traffic corridors. These roads are in good condition. Currently, there are no designated weight limits for Crane roads; however, several bridges have five or ten ton limits. Gravel roads service the magazine areas, certain security areas, and the perimeter. The delivery routes are shown on **Exhibit V.B-13**.

Hazardous waste is generated at various points throughout the installation and moved to the CSF, SPAM, CDC, APE 1236 Incinerator, and OB/OD sites utilizing DOD maintained roads that are contained within the boundary of the installation. Handling and transport of materiel at the OB/OD facilities are discussed in Attachment V, Section B-4.

Hazardous wastes that are received from off-site arrive at the Crane gate will be placed in a conditionally exempt magazine or permitted unit upon acceptance at CRANE.

#### B-4b Delivery Vehicles

Containerized wastes, hauled from the satellite/accumulation locations to the CSF, are transported by truck, such as a one-ton stake-bed truck with hydraulic lift tailgate.

Red phosphorous contaminated sludge is transported from pyro production area Building 133 to dewatering unit 11-ABG (Ammunition Burning Grounds), using a 500-gallon tank situated on a wagon chassis.
Explosives-contaminated sludge is hauled, from production areas, via a three-ton pump truck with a 1,250-gallon tank, to dewatering unit 10-ABG.

Dewatered sludge is re-burned before being placed in a roll-off box. Ash generated at 10-ABG is hauled by a "roll-off box." Maximum loading would not exceed 80,000 pounds gross vehicle weight.

Containerized wastes from the CSF are transported off-site on van-trailers or flatbed trailers for treatment, storage, or disposal at a RCRA facility. The amount transported is dependent upon the type of vehicle utilized.

The Army uses <sup>3</sup>/<sub>4</sub>-ton pickup trucks to pick-up/collect PEP production scrap from the various production buildings. After pick-up, the PEP scrap is delivered to the appropriate unit for thermal treatment.

# B-4c Road Conditions

The routes are all paved roads. All roadways are of adequate width for safe hauling operations and are properly designed, constructed, and maintained for these purposes and volumes. The pavement of all roads of the primary road system is a minimum of 24 feet in width, marked and striped and capable of H-20 highway loading. Access to specific waste storage or generation points may traverse gravel drives and parking areas. In all conditions, the roadways are compatible with the needs of the wastes hauling operations.

# B-d Traffic Volume

Waste hauling operations at CRANE are variable for each permitted treatment unit. Trips are made at various times of the day. Other CRANE traffic utilizing the haul routes includes personal vehicles of employees, as well as the Navy and Army automobile and service trucks stationed at CRANE.

Much of the peak traffic, naturally, would occur during early morning (0600 to 0800 hours) and late afternoon (1500 to 1700 hours) "rush hour" times, as personnel commute to and from the facility. Potential traffic congestion is mitigated by virtue of the adequate access provided by five entry gates; by a staggered shift workday; and by the very adequate primary and secondary roadway network.

# B-4e Traffic Controls

Existing traffic controls along the routes consist of stop signs, railroad markings, yield signs, speed limit signs, lane control, and directional signs. Traffic signals are located at two intersections: H-5 with H-45, and H-5 with H-2. All roads, intersections, and railroad crossings are marked sufficiently to control and maintain traffic in an adequate manner. A Traffic Engineering Study was prepared for CRANE in August, 1978 (MTMC Report TE 78-5: 55 pp), by the Military Traffic Management Command, Transportation Engineering Agency.

Intersections included in the study that are on the hazardous waste traffic routes in <u>Exhibit V.B-13</u> include the following intersections:

- H-45 with H-101
- H-45 with H-58
- H-5, H-2, with H-100
- H-5 with H-45
- H45 with H-99

Present traffic control is adequate at all the preceding intersections, as well as other intersections along the haul routes not on the primary system studied. Signing and controls at these locations are adequate for the conditions and the traffic volumes.

# C. WASTE CHARACTERISTICS

Waste characteristics vary by facility and/or treatment technology. Therefore, each section on storage or treatment covers those characteristics specific to that facility. The waste analysis plan and analytical methods, however, are more consistent across the entire CRANE site and are thus presented in this Introduction, with reference from each of the other attachments to this presentation that follows.

The main type of materials treated at the CRANE treatment facilities are categorized as military munitions. Military munitions are defined in 40 CFR 260.10 as "all ammunition products and components produced or used by or for the U.S. DOD of the U.S. Armed Services for national defense and security, including military munitions under the Department of Defense, the U.S. Coast Guard, the U.S. Department of Energy (DOE), and National Guard Personnel. The term military munitions includes: confined gaseous, liquid and solid propellant, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries used by DOD components, including bulk explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof."

Military munitions, as defined above, are manufactured to exacting standards, with all components and chemical compositions well identified at the point of manufacture and assembly. The composition of all materials must meet "Mil Standards" as must the assembly of completed munitions. Military munitions are managed in accordance with the Military Munitions Rule.

# C-1 Chemical and Physical Analyses

**<u>Table C-1</u>** provides a list of anticipated test parameters that are used to provide adequate information for the proper management of waste mixtures. Waste characterization may also be accomplished through generator/process knowledge. Ignitable, reactive, and incompatible (IRI) wastes are separated, as needed, within each storage location.

<u>**Table C-2**</u> shows hazardous waste constituents that are present in containerized waste. <u>**Table C-3**</u>, entitled Chemical/Physical Analytical Procedures for CSF Wastes, lists test parameters, method references, and sample container types, volumes, and preservatives that will be followed for each unit listed in this permit. The appropriate parameters will be selected based on knowledge of the process and materials used.

Ash is generated during disposal operations at the ABG. In the event that bulk containers of ash are not removed from the generation site to the disposal site within 90 days of the start of accumulation, it would be necessary to move the containers to the CSF outside non-liquid storage area. After open burning at the ABG takes place, the ash residue is carefully inspected to ensure the burn was complete. If the burn was judged complete, then the burn is certified complete. If the burn was not complete it will be re-burned until it is certified to be non-reactive. Any ABG ash that is containerized for storage at the CSF will not be put into storage until the area supervisor has certified the burn complete.

# C-1a Containerized Waste

Three previously identified permitted storage areas within the CSF boundaries are used to store hazardous wastes generated at CRANE. Wastes are collected from the generators and brought to these areas. Waste characterization determination is made before being placed into storage at the CSF.

**Figure C-1** and **Figure D-1** show the three units of the CSF. Areas inside Building 2993 and Building 3435 are designed for the storage of liquid wastes and wastes containing free standing liquids.

The graveled area adjacent to Building 2993 (is designed to hold only wastes that do not contain free liquids.

Materials that are thermally treated arrive at the locations in various containers and remained stored in those containers until they are treated.

Waste military munitions to be treated at CRANE's thermal treatment units are packaged in cardboard boxes and drums; wooden crates; metal drums, cans, and containers; lined plastic cans and containers; cloth containers; shell; projectile; and component bodies that are Performance Oriented Packaging as regulated under the Department of Transportation (DOT). Waste military munitions are never placed in containers which previously held incompatible wastes. Waste military munitions are typically placed in containers that previously held military munitions.

C-1b	Waste in Tank Systems
C-Ic	Waste in Piles
C-1d	Landfilled Wastes
C-1e	Wastes Incinerated and Wastes Used in Performance Tests
C-If	Wastes to be Land Treated
C-1g	Waste in Miscellaneous Treatment Units
C-1h	Waste in Boilers and Industrial Furnaces

Wastes are not stored in these units. These Sections are not applicable.

#### C-2 Waste Analysis Plan

Waste analysis specifications are presented here for waste materials, but not material that is handled at the thermal treatment units. The waste analysis plan for such thermal treatment material is presented in Attachment V as specific to those activities.

#### C-2a Parameters and Rationale

Waste of totally unknown characteristics will be sampled and analyzed before being placed in storage at the CSF. This situation will only exist after an intensive effort is made to investigate and determine the origin of the material. The pH and ignitability characteristics can be determined on station or via contract laboratory. This type of material will require characterization for all parameters necessary to determine proper treatment/disposal methods. Methods used to perform these analyses are described in the Waste Analysis Plan that follows.

The operator will not seek land disposal for any liquid hazardous waste. The hazardous waste contract requires that all liquid waste be treated prior to final disposal. The Toxic Characteristic Leaching Procedure (TCLP) or generator knowledge will be utilized to characterize all solid waste. <u>Table C-1</u>, contains a list of the analysis parameters that will be selected from, regarding wastes to be managed at the CSF.

#### C-2b Test Methods

**Table C-3**, Chemical/Physical Analytical Procedures for CSF Waste, lists test parameters, method references, sample container types, volume, and preservatives. Most of these methods are taken from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" SW-846, latest revision. Any laboratory that will be performing analysis for CRANE will be required to use these methods or other methods approved by the Indiana Department of Environmental Management (IDEM).

The Quality Assurance/Quality Control Plans for the laboratory currently performing analytical work for the hazardous waste program is included by reference (See Test America Quality Assurance Manual, dated November 1, 2011).

# C-2c Sampling Methods

Several sampling methods are utilized for collecting waste samples at the CRANE facility. Sampling methods are determined based on known constituents and type of waste (solid or aqueous). CRANE's intent is to collect a true representative sample of the waste being submitted for analysis. Described below are the methods for collecting waste samples from the CSF, SPAM, CDC, APE 1236 Incinerator air pollution control systems (APCSs) and Incinerator ash, and OB/OD residuals. Compositing of waste from different processes will not be done. The availability of the contract laboratory is part of the overall hazardous waste management contract. Therefore, the primary contractor may collect some samples and the facility operator may collect some samples.

Typically, clean wide mouth glass or plastic bottles, with adequate wall thickness, are obtained from the contract laboratory and used for sample collection. In the event that clean containers are not available, other containers may be used after they have been thoroughly washed with detergent, rinsed with tap water and distilled water, and solvent rinsed to remove contaminants prior to use. Normally glass is used, unless strong alkali or hydrofluoric acid is involved. Plastic (linear polyethylene) is used for those purposes. Covers are lined with foil or Teflon and are screw type. Photosensitive wastes are containerized in colored or opaque bottles. Adequately sized containers are used to satisfy the analytical requirements, and to facilitate the logistics of transferring the waste to the container.

Types of samplers and decontamination/cleaning methods that may be used are shown in the following:

- 1. A polyvinyl chloride (PVC) Coliwasa is used for the sampling of most wastes in containers and tanks, except those that contain solvents with ketones, nitrobenzene, dimethylformamide, mesityl oxide, and tetrahydrofuran. The sampler is cleaned by rinsing with an appropriate solvent, washing with soapy water, and rinsing with tap water and distilled water.
- 2. A glass Coliwasa is used for sampling most other containerized liquids, except very strong alkali and hydrofluoric acid wastes. The sampler is decontaminated as described under (1).
- 3. Glass and PVC tubes (thief samplers) which are ½ inch in diameter by four feet long are used for core sampling liquids and sludge. Wastes that contain concentrated alkali or hydrofluoric acid must use PVC thief samplers. All thief samplers are discarded after use.
- 4. Plastic or glass scoops are used to sample homogeneous solid waste. Each scoop has a lid, which also serves as the sample container.
- 5. A metal soil auger is used for sampling soils at depths of four inches to three feet. A trowel is used to sample contaminated surface soils up to four inches.
- 6. A sediment sampler, for sampling pond and creek bottoms, consists of a weighted metal body with a spring loaded closure and a rope for recovery.

All samples are properly labeled with the type of waste, related operation, sampler's name, date of sampling and proper identification numbers (building and container ID number).

All information concerning sample number, collector, collector's signature, date and time of collection, waste types, signatures of persons in chain of possession and relative dates is recorded on a chain of custody form. An example of this type of form is displayed as <u>Exhibit C-1</u>.

The general procedures for sampling containers are as follows:

- All personnel will know and understand the sampling procedures;
- All personnel will have proper protective equipment and clothing;
- Move all containers to be sampled onto a level surface in a well-ventilated area, out of the sunlight;
- Prepare the cleaning and rinsing solutions prior to commencing sampling operations; and
- Select and prepare sampling device.

# C-2(C)(1)(A) OPENING THE CONTAINER

Slowly open the container of material to be sampled, to release any pressure which might have built up inside the container during storage. Bleeding the pressure in this manner eliminates the possibility of losing material through the opening, and also reduces the danger of a pressure surge.

When the pressure has bled, the container will be fully opened and ready for sampling.

# C-2(C)(1)(B) SAMPLING PROCEDURE FOR LIQUID WASTES

# Coliwasa:

- A plastic or glass Coliwasa tube is inserted into the container with the stopper fully open.
- When the Coliwasa has bottomed out in the container, personnel will pull the center rod up, causing the stopper to close and trap the waste in the tube. This allows collection of all layers that may exist in the container, and determination can be made of the percentage of each layer.
- The sampling tube with the extracted sample is carefully removed from the container, making sure that all discharge goes back into the container. The tube is then placed inside a quart sampling jar and the liquid is released by pressing down on the rod and releasing the stopper.

# **Glass Tube:**

- The glass sampling tube is inserted into the container. This allows the waste material to flow freely into the tube, which enables a sample to be representative of any layers, or levels, in the container.
- When the tube is at the bottom of the container, the sampler's thumb is then placed securely over the top of the tube, thus entrapping the waste material in place by natural vacuum.

# C-2(C)(1)(C) SAMPLING PROCEDURES FOR DRY (NON-LIQUID) WASTES

Powders or granular wastes will be withdrawn from the container with a thief sampler or trowel. Dry sludges or soils will be withdrawn with an auger or trier sampler or soil probe.

# Thief:

• Insert closed thief into waste material. Rotate inner tube to open thief. Wiggle the unit to encourage material to flow into thief. Close thief and withdraw. Place sampler thief in a horizontal position with the slots facing upward. Remove the inner tube from thief and transfer sample to a container.

# Trier:

• Insert trier into waste material 0 to 45 degrees from horizontal. Rotate trier to cut a core of the waste. Remove trier with concave side up and transfer sample to container.

#### Auger:

- Through the middle of an aluminum pie pan, bore a hole large enough to allow the blade of the auger to pass through. The pan will be used to catch the sample brought to the surface by the auger.
- Place the pan against the sampling point. Auger through the hole in the pan until the desired sample depth is reached. Back off the auger and transfer the sample on the pan, and the material adhering to the auger, to a container. Spoon out the rest of the loosened sample with a sample trier.

# **Sample Preservation:**

• Each sample collected will be properly preserved and placed on ice to ensure the chemical and physical integrity of the sample during shipment to the assigned laboratory prior to analysis. The type of sample preservation will vary according to the sample type and the parameter to be measured. Preservation and storage requirements described in Table C-3 and EPA manual SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3<sup>rd</sup> Edition, or latest revision will be followed.

# **Closing Sample Container:**

- The sample container will be closed. The waste container will be marked with sample identification number and date. The sample bottle will be marked with: sample date, testing parameters, and sample identification number (same as on the waste container). This information will be entered on the sample log sheet and chain of custody form. Examples of these two forms are found in **Exhibits C-4** and **C-5**, respectively. Any additional information, (i.e. material safety data sheet and generating processes) will be noted.
- Chain of custody will begin with the sample collector. Typically the sample will be delivered to the contract laboratory via the hazardous waste disposal contractor or other supporting contractor. They will transport samples to the laboratory immediately after sampling.

# C-2d Frequency of Analyses

Waste streams that are routinely generated, will be reviewed annually and re-analyzed when the process changes and/or when the receiving facility requires new analytical.

If enough information is available, and when acceptable with the receiving disposal facility, waste characterization determination will be based on generator knowledge.

All waste streams, regardless of frequency of generation will be characterized as described above to make a proper waste determination, determine DOT shipping requirements and to gain disposal approval at an off-site TSDF.

# C-2eAdditional Requirements for Waste Generated Off-SiteC-2e(1)CSF

The CSF will not be utilized to store wastes generated off-site. Therefore no procedure exists for the CSF to inspect or analyze representative portions of wastes generated off-site. Also, no statistical method of determining a representative sample exists. If a situation involving an outside party should occur, the wastes would be handled on a case by case basis and all applicable procedures would be followed.

C-2e(2) SPAM, CDC, APE, and OB/OD

EOD Responses

Explosive Ordnance Disposal (EOD) Detachment personnel, at CRANE, are qualified explosives or munitions emergency response specialists and respond to on-station/off-station emergencies involving

both military and, at the request of local, state, and/or federal law enforcement or other officials, nonmilitary munitions for treatment at the CRANE hazardous waste treatment facilities. Based on knowledge gained from interview of persons with knowledge of the emergency, observation at the scene, study of information manuals, and any other source from which they can obtain information, the EOD specialist makes a determination as to the level of hazard presented by the munition or explosive device and formulates a plan to either destroy the item immediately, transport it back to CRANE, or turn further actions over to law enforcement (non-military items only). EOD Detachment does not use the Hazardous Waste Manifest for transport of emergency response items back to CRANE because EOD Detachment operates under emergency conditions; they are exempt from the generator, and TSDF regulations. In Indiana, the CRANE EOD Detachment operates according with Exhibit V.C-3, Memorandum of Understanding (MOU) established with IDEM. Should EOD Detachment conduct emergency responses in other states, coordination with the state environmental departments would be facilitated by the state agency requesting EOD Detachment services. When sensitive material/items are received on-Center, they are treated/disposed of immediately or placed in a conditionally exempt (CE) magazine. From the CE magazine, the waste is then transferred to an appropriate treatment area, where the waste is either detonated or open burned.

#### Acceptance of Off-Site Waste Military Munitions

Waste military munitions from other DOD facilities will be accepted only after verification of type and quantity of waste and feasibility for treatment at CRANE. CRANE places a priority on treating on-site wastes and generally would accept wastes from off-site facilities only after other treatment options had been considered. These wastes will be managed in accordance with the Military Munitions Rule. The generators of the waste munitions will identify and profile their wastes prior to sending it to CRANE. This information will be used as the waste analysis for the items that will be treated. In no case will CRANE accept waste munitions that differ from those normally treated at the CRANE treatment facilities. No military chemical warfare agents or related compounds, or materials contaminated with, or suspected of being contaminated with these agents or compounds, will be accepted for treatment.

## Agreements with Other Federal Facilities

In some cases, other Federal Agencies such as the Bureau of Alcohol, Tobacco and Firearms have promulgated agreements with DOD on the handling of confiscated explosives and fireworks from illegal operations. As the recognized experts on explosives, DOD has the facilities and the knowledge to dispose of these illegally manufactured items confiscated as a result of law enforcement actions. On occasion CRANE has been asked/requested to store and treat those illegally manufactured items. Before CRANE accepts these items the generator will be required to show documentation that confirms the items contain energetic materials of a similar nature to those that are currently treated.

Under 10 U.S.C. §2692, DOD is prohibited by law from using DOD installations for the storage or treatment of non-DOD owned conventional explosive ordnance or explosive material except when providing temporary storage or treatment of conventional explosives in order to provide emergency lifesaving assistance to civil authorities, or to otherwise assist law enforcement agencies in accordance with established agreements between DOD and the head of the Federal agency concerned. An example of such an agreement is the MOU with the Bureau of Alcohol, Tobacco, and Firearms.

#### C-2f Additional Requirements for Ignitable, Reactive, or Incompatible Wastes

Additional requirements for IRI wastes may be applicable, due to safety hazards related to the management of these wastes. IRI wastes will be packaged separately and clearly identified.

CRANE samples are primarily transported to the laboratory by the hazardous waste contractor. The samples consist of small volumes and are hauled in a private automobile.

When CRANE ships samples by commercial carrier, the following procedure from EPA Publication SW-846 is followed:

# C-2(F)(1)(A) SHIPPING OF SAMPLES

Any material that is identified in the DOT Hazardous Material Table (49 CFR 172.101) must be transported as prescribed in that table. All other hazardous waste sampled must be transported as follows:

- Collect sample in a 16-ounce or smaller glass or polyethylene container with nonmetallic Teflonlined screw cap.
  - Allow sufficient air space (approximately 10% by volume) so container is not liquid full at 54°C (130 °F). If collecting a solid material, the container plus contents should not exceed one pound of weight. If sampling for volatile organic analysis (VOA), fill VOA container to septum but place the VOA container inside a 16-ounce or smaller container, so that required air space may be provided. Large quantities, up to one gallon (3.785 liters), may be collected, if the samples' flash point is 23 °C (75 °F) or higher. In this case, flash point must be marked on the outside container (e.g. carton, cooler), and shipping papers should state that "Flash Point is 75 °F or higher."
- Seal sample and place in a four mil-thick polyethylene bag (one sample per bag).
- Place sealed bag inside a metal can with noncombustible, absorbent cushioning material (e.g. vermiculite or earth) to prevent breakage (one bag per can). Pressure-close the can and use clips, tape or other positive means, to hold the lid securely.
- Mark the can with:
  - Name and address of originator
  - Flammable Liquid N.O.S. UN 1993"
  - or "Flammable Solid N.O.S. UN 1325"
  - NOTE: UN numbers are now required in proper shipping names.
- Place one or more metal cans in a strong outside container, such as a picnic cooler, and add ice to container to preserve samples.
- Prepare for shipping:
  - "Flammable Liquid N.O.S. UN 1993" or "Flammable Solid N.O.S. UN 1325"; "Cargo Aircraft Only" (if more than one quart net per outside package); "Limited Quantity" or "Ltd. Qty."; "Laboratory Samples"; or "Net Weight \_\_\_\_\_" or "Net Volume \_\_\_\_" (of hazardous contents), should be indicated on the shipping papers and on the outside of the exterior shipping container. The shipper certification should then be signed.
- Stand by, for possible carrier requests to open the outside containers for inspection, or to modify packaging. It is wise to contact the carrier before packing, to ascertain local packaging requirements, and not to leave the area before the carrier vehicle (aircraft, truck, etc.) is on its way.

# C-2g Additional Requirements Related to Boiler and Industrial Furnaces

CRANE does not manage hazardous wastes in boilers or industrial furnaces. Therefore, this section is not applicable.

# C-2h Additional Requirements Pertaining to Containment Buildings

CRANE does not manage hazardous wastes in containment buildings. Therefore, this section is not applicable.

# C-3 Waste Analysis Requirements Pertaining to Land Disposal Restrictions

All hazardous wastes including treatment residues must meet land disposal restriction (LDR) standard prior to land disposal. Treatment standards for hazardous wastes are contained in 40 CFR 268.40.

# C-3a Waste Analysis

The RCRA waste code(s) for all wastes stored at the CSF are determined through laboratory analysis or process knowledge. The associated hazardous waste codes are given in <u>Table C-2</u>.

Treatment and disposal facilities receiving the wastes are provided a notice in writing of the appropriate treatment standards. This notice includes the following information:

- US EPA Hazardous Wastes Number(s),
- The corresponding treatment standard(s),
- The manifest number associated with the waste shipment, and
- Waste analysis data.

# C-3a(1) Spent Solvent and Dioxin Wastes

Spent Solvent wastes that are treated at the CRANE installation are described in detail in Section C-3a, where applicable, for each of the treatment units (Attachments II, III, IV, & V)..

C-3a(2) California List Wastes

This section is not applicable to CRANE operations.

C-3a(3) Listed Wastes

Listed wastes that are treated at the CRANE installation are described in detail in Section C-3a, where applicable, for each of the treatment units (Attachments II, III, IV, & V).

C-3a(4) Characteristic Wastes

Characteristic wastes that are treated at the CRANE installation are described in detail, where applicable, for each of the treatment units (Attachments II, III, IV, & V).

C-3a(5) Radioactive Mixed Waste

CRANE does not manage radioactive mixed wastes. Therefore, this section is not applicable.

C-3a(6) Leachates

Leachates are not land disposed at this site. Therefore, this section is not applicable.

C-3a(7) Lab Packs

Lab packs are not land disposed at this site. Therefore, this section is not applicable.

C-3a(8) Contaminated Debris

Contaminated debris is not land disposed at this site. Therefore, this section is not applicable.

C-3a(9) Waste Mixtures and Waste with Overlapping Requirements

Waste Mixtures and Wastes with overlapping requirements that are treated at the CRANE installation are described in detail, where applicable, for each of the treatment units (Attachments II, III, IV, & V)...

C-3a(10) Dilution and Aggregation of Wastes

This section is not applicable to CRANE operations.

# C-3b Notification, Certification, and Recordkeeping Requirements

# C-3b(1) Retention of Generator Notices and Certification

CRANE may receive wastes that do not meet LDR treatment standards from off-site facilities for treatment at the CRANE treatment facilities. Copies of generator notifications required under 40 CFR §268.7(a) will be retained in the files.

# C-3b(2) Notification and Treatment Requirements for Treatment Facilities

Hazardous waste residues from the treatment of waste military munitions/explosives at the CRANE treatment facilities that meet LDR requirements may be sent to off-site land disposal facilities. Hazardous waste residues that do not meet LDR requirements may be sent to off-site storage or treatment facilities to be further managed. Records of notices provided to off-site storage, treatment and land disposal facilities will be maintained in CRANE records.

# C-3b(3) Notification and Certification Requirements for Land Disposal Facilities

CRANE does not manage hazardous wastes in onsite land disposal facilities. Therefore, this section is not applicable.

# C-3b(4) Wastes Shipped to Subtitle C Facilities

Hazardous waste residues that do not meet LDR requirements may be sent to off-site Subtitle C storage or treatment facilities to be further managed. Records of notices provided to off-site storage, treatment and land disposal facilities will be maintained in CRANE records.

# C-3b(5) Wastes Shipped to Subtitle D Facilities

CRANE treatment residues that are not hazardous may be sent to off-site Subtitle D facilities for further management. Records of notification to IDEM and certification that the waste residue is not hazardous will be placed into the CRANE files. Information specified in 40 CFR 268.9(d) will be supplied.

C-3b(6) Recyclable Materials

CRANE does not use recyclable materials in a manner constituting disposal. Therefore, this section is not applicable.

# C-3b(7) Recordkeeping

CRANE maintains records of all treatment, storage, and/or disposal facilities that manage wastes generated onsite, make determinations if the waste is restricted from land disposal and keep documentation of that determination and maintain documentation to indicate where, if any restricted wastes were treated, stored, and/or disposed.

# C-3c Storage of Restricted Wastes

CRANE only stores restricted wastes for purpose of accumulating sufficient quantities for proper treatment, recovery, or disposal.

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

CRANE is not requesting any exemptions, extensions, or variances to land disposal restrictions. Therefore this section is not applicable.

# D. PROCESS INFORMATION

Process information is covered in each Attachment. The processes germane to operations at CRANE include:

	ATTACHMENT>>	CSF	SPAM	CDC	APE	OB/OD
D-1	Containers	¥	¥	~	~	~
D-2	Tank Systems					*
D-3	Waste Piles					
D-4	Surface Impoundments					
D-5	Incinerators				~	
D-6	Landfills					
D-7	Land Treatment					
D-8	Miscellaneous Units		~	<b>&gt;</b>		~
D-9	Boilers and Industrial Furnaces					
D-10	Containment Buildings					

# E. GROUND WATER MONITORING

Ground water monitoring is specific to individual treatment or storage areas. In some cases (i.e., CSF, SPAM, CDC, APE 1236), the operations are new and/or have no demonstrated need for ground water monitoring, nor is ground water monitoring indicated for future operations, as safeguards (both physical and procedural) are built into the program. However, OB/OD are operations that have longer duration and where past operations were in direct contact with the soils; thus, routine verification of the status of ground water constituent levels are warranted. The ground water monitoring programs for those operations are presented in the respective Attachment V.

# E-1 Exemption from Ground water Protection Requirements

This section is not reviewed in general terms here; specific applicability is presented in the Attachments for which monitoring is required.

# E-2 Interim Status Ground water Monitoring Data

This section is not reviewed in general terms here; specific applicability is presented in the Attachments for which monitoring is required.

# E-3 General Hydrogeologic Information

This section is not reviewed in general terms here; specific applicability is presented in the Attachments for which monitoring is required.

# E-4 Topographic Map Requirements

This section is not reviewed in general terms here; specific applicability is presented in the Attachments for which monitoring is required.

# E-5 Containment Plume Description

This section is not reviewed in general terms here; specific applicability is presented in the Attachments for which monitoring is required.

# E-6 General Monitoring Program Requirements

This section is not reviewed in general terms here; specific applicability is presented in the Attachments for which monitoring is required.

# E-7 Detection Monitoring Program

This section is not reviewed in general terms here; specific applicability is presented in the Attachments for which monitoring is required.

# E-8 Compliance Monitoring Program

This section is not reviewed in general terms here; specific applicability is presented in the Attachments for which monitoring is required.

# E-9 Corrective Action Program

This section is not reviewed in general terms here; specific applicability is presented in the Attachments for which monitoring is required.

# F. PROCEDURES TO PREVENT HAZARDS

# F-1 Security

# F-1aSecurity Procedures and EquipmentF-1a(1)24-Hour Surveillance System

CRANE is a DOD closed installation. Physical Security is maintained 24 hours per day, 7 days per week. The security force is of sufficient size and capability to comply with DOD requirements for this facility's size and sensitivity.

As a closed installation, CRANE is not open to the general public, except when and where specifically designated by the Commanding Officer.

All areas described and discussed within this RCRA Part B Permit Application are officially designated as "Restricted Areas" by direction of the Commanding Officer. Unauthorized persons are not allowed unaccompanied access into these areas.

Security patrols check the installation entry points (gates) at least three times during closed hours (1600 to 0600). During weekends and holidays entry points and barriers are checked 6 to 8 times per 24-hour period. Patrols check to ensure that gates, doors, and the perimeter fences are secure, and inspect for any signs of attempted entry. Normally, patrols do not enter individual facilities unless unusual situations are observed. Should this occur, the Fire Shift Chief/Captain, the Navy Officer of the Day, or both are contacted. These individuals would deploy personnel with specialized training to respond to a given situation.

The security patrols are armed and equipped with two-way radios. They maintain constant contact with the Fire/Police Communications Center. This Center is manned 24 hours per day.

CRANE's on-station Explosive Ordnance Disposal (EOD) Detachment will respond to any emergency incident involving explosive, reactive, or shock-sensitive materials. During off-duty hours, a daily team is assigned by the Officer of the Day.

#### *F-1a(2)* Barrier and Means to Control Entry

The installation is bounded by a security-fence. To enter the installation, all CRANE employees are required to produce a government-issued photo-identification badge prior to being allowed access to the installation. Individuals are required to wear these badges at all times while within the installation's boundaries. Visitors, tenants, and contractors are required to present photographic identification prior to issuance of badges and entrance into the installation. Each visitor, tenant, and contractor is required to prominently display these badges at all times while within the installation.

"Clear zones" (undeveloped areas) are maintained inside and outside the installation's perimeter fence and are patrolled by security guards. A designated "Key Control Officer" is responsible for keeping and issuing keys to the restricted areas within the installation. A record of issuance and return of all keys are maintained in a logbook.

F-1a(2)(a) Barrier

Each facility is completely enclosed within the installation's fence perimeter.

F-1a(2)(b)1 Means to Control Entry

Section F-1a(2) above describes the means to control entry for the CRANE installation.

At each facility, there is signage to indicate that visitors must report to the office before proceeding.

F-1a(2)(b)2 Control of Entry

Each facility is completely within the installation's fenced perimeter (i.e., completely enclosed by an eight-foot high chain-link security fence). Access to each facility may only be gained through a locked gate in the installation perimeter fence.

All entry points are locked when not in use; keys are maintained by authorized personnel, including the hazardous waste facility operators, the Officer of the Day, and the Police/Fire Shift Commander.

F-1a(3)(b) Warning Signs

Signs reading "Danger – Unauthorized Personnel Keep Out" that are clearly legible from outside the facility are posted at entry into each facility.

#### F-1b Waiver

CRANE is not requesting any waivers from security procedures and equipment requirements. Therefore, this section is not applicable.

#### **F-2** Inspection Schedule

#### F-2a General Inspection Requirements

All hazardous waste management sites are regularly inspected by CRANE and CAAA hazardous waste facility operators (hazardous waste handlers), and by Environmental Protection management personnel. Inspections are documented in inspection logs. The inspection log serves as the written record of the results of implementing the Operational Inspection Schedule. In accordance with 40 CFR 264.15(d), the Inspection Logs are maintained at the individual treatment units.

Specific inspection requirements are described in Section F-2b of each attachment.

# F-2b Specific Process Inspection Requirements

# F-2b(1) Container Inspection

Containers are used to store wastes and products (or waste streams) from the treatment processes. The particular inspection needed for each RCRA-permitted facility is described in the respective attachment at Section F-2b.

F-2b(2) Tank System Inspections

CRANE does not store or treat wastes in tank systems. Therefore, this section is not applicable.

*F-2b(3)* Waste Pile Inspections

CRANE does not store or treat wastes in waste piles. Therefore, this section is not applicable.

F-2b(4) Surface Impoundment Inspections

CRANE does not store or treat wastes in surface impoundments. Therefore, this section is not applicable.

# F-2b(5) Incinerator and Associated Equipment

This section identifies daily and monthly inspections that are performed at the APE 1236.

F-2b(5)(a) Daily Inspections

Various operations (storage and treatment) are inspected daily to ensure proper operation and to highlight maintenance needs. Each storage and treatment facility has a specific list of equipment that must be inspected daily; each attachment presents the list of daily inspection checks that must be made, and an inspection form is provided.

# F-2b(5)(b) Monthly Inspections and Equipment Tests

Each storage and treatment facility includes specific items (operating equipment and response equipment) that are inspected monthly. For example, the monthly inspection includes flushing the safety eyewash stations and emergency showers, and checking the pressure and flow rates of the fire hydrants. The monthly inspections are performed by the operators at each facility. Each eyewash and showers station is tagged with the time and date of the most recent inspection.

F-2b(5)(c) Annual Inspections and Equipment Tests

The CRANE Fire Prevention/Protection Branch conducts yearly tests and checks of the radio signalcontrolled fire alarm system that is in operation at each storage and treatment unit. The detection sensors are heat-activated and, when activated, send a signal to the Fire/Security Communication desk. The test includes activation of the sensors in the normal AC-powered mode and in backup DC-powered mode.

Additionally, the yearly inspection includes checking the pressure and flow rates of the fire hydrants. The Fire Prevention/Protection Branch will maintain the yearly inspection records.

F-2b(6) Landfill Inspections

CRANE does not dispose of hazardous wastes into landfills. Therefore, this section is not applicable.

*F-2b(7)* Land Treatment Facility Inspection

CRANE does not treat wastes in land treatment facilities. Therefore, this section is not applicable.

F-2b(8) Miscellaneous Unit Inspections

CRANE treats wastes in miscellaneous units at the SPAM, CDC and OB/OD facilities. The details of the inspections are provided in the relevant attachment at Section F-2b.

# F-3a (1-4) Waiver of Documentation of Preparedness and Prevention Requirements

These sections are not applicable. CRANE has facility-wide documentation of on-site preparedness and prevention measures. The procedures for hazardous waste management facilities are addressed in the Contingency Plan and Emergency Procedures. The Contingency Plan is an evergreen document, always in use and continually updated. The Contingency Plan is retained at the EP office and CRANE Fire

Protection/Prevention Branch, and copies are provided at other critical operations. The general content of the Contingency Plan is provided in the attached supplement.

The Contingency Plan sets forth the procedures that are used to minimize or prevent damage to human health and the environment from any sudden or non-sudden discharges of hazardous waste or hazardous waste constituents. Though the likelihood of a release of hazardous wastes or substances is minimized by implementation of operating and emergency procedures, the possibility of a release must always be recognized. Due to the nature of the substances used and managed at CRANE, a likely result of a sudden release, should one occur, is fire and explosion.

Because of the possibility for fire or explosion, CRANE operates and maintains its own fire department. Personnel of the CRANE Fire Protection/Prevention Branch are appropriately trained to manage the types of emergencies that are possible because of the potentially explosive nature of materials, products, and by-products. The fire department is on alert at all times to handle the types of fires that could occur during the management of hazardous wastes at the facility.

CRANE operates under explicit fire-fighting instructions formulated to protect the health and safety of the installation employees, and prevent the spread of fire into adjoining areas. The major provisions of these procedures are as follows:

(1) All fires are reported immediately to the Fire Protection/Prevention Branch. The decision to fight the fire or let it burn is made on a case-by-case basis, and is determined based on the hazard classification and characteristics of the materials involved in the fire. If it is adjudged too hazardous to fight the fire, Fire Protection/Prevention Branch personnel remain at the scene to contain the fire, prevent access to dangerous areas by non-authorized personnel, and to keep the fire from spreading to adjacent areas.

(2) All transportation vehicles, offices, and operating areas are provided with a water- or a hand-held fire extinguisher. The type of extinguisher provided corresponds to the nature of the materials handled or processed in that area. Operating personnel are instructed in the proper selection (by type) and use of the extinguisher(s).

(3) Operating personnel are also instructed to use the extinguishers only to fight minor fires, and only if there is no personal danger involved from doing so. In all cases, the Fire Protection/Prevention Branch is always notified immediately about any fire.

(4) Hazardous waste management facility internal communications are made by direct voice contact. Communications (internal and external), implementation of emergency or rescue procedures, and other related emergency response procedures are found in greater detail in the Contingency Plan.

Specific details of preparedness and prevention requirements are provided in each attachment at Section F-3.

# F-4 Preventive Procedures, Structures, and Equipment

Section F-4 in each attachment covers the specific details of the following aspects of the preventive program:

- Unloading operations,
- Run-off prevention, water supplies,
- Equipment failure and power outages, and
- Personal protective equipment.

# F-5 Prevention of Reaction of Ignitable, Reactive, and Incompatible Waste

Section F-5 of each attachment contains specific procedures for particular hazardous materials. Two subsections target reactive, ignitable, and incompatible wastes. Because each facility has its own equipment and arrangements, these procedures are individualized for each facility.

# G. CONTINGENCY PLAN

The Contingency Plan is an evergreen document, always in use and continually updated. The primary copy of the Contingency Plan and Emergency Procedures is kept in the CRANE Environmental Protection Office and the CRANE Fire Protection/Prevention Branch. A copy of the Contingency Plan is also kept at each hazardous waste (HW) facility listed in this plan. The detailed description of the Contingency Plan is contained in the attached supplement.

# H. PERSONNEL TRAINING

CRANE provides different levels of training to its hazardous waste handling employees. Previous training and/or experience may be used to meet training requirements. The hazardous waste training covered in this permit relates to hazardous waste generation, storage, permitted hazardous waste treatment units, and emergency response. The categories covered in training include the following:

- (1) Hazardous Waste;
- (2) Spill Response;
- (3) 49 CFR 172.704
- (4) Miscellaneous.

# H-1 Outline of the Training Program

# (1) Hazardous Waste/Explosive Hazardous Waste Generator; Spill Response Training

<u>Target Audience</u>: Hazardous Waste Workers and Supervisors who manage waste at a less than 90day generation/accumulation site.

These employees are the initial response to releases or potential releases of hazardous substances at their site. Their goal is to protect nearby persons, property, and the environment from the effects of the release. They shall be trained to respond in a defensive fashion without actually trying to stop the release. Their function shall be to contain the releases from a safe distance, keep it from spreading, and prevent exposure.

Length of Training:Initial and refresher - On-line Training Module or sufficient training/experience<br/>to objectively demonstrate competency in the topics listed below.Frequency of Training:The Initial Training will be provided within six months of the employee's hire<br/>date. Until the initial training is completed, no employee shall work in<br/>unsupervised positions. The Refresher course will be provided annually<br/>thereafter.

# Topics Included:

Hazardous Waste Training:

- Federal, State, Local, and Navy hazardous waste regulations, policies, practices, and instructions.
- Properties of hazardous materials and hazardous wastes.
- Safe handling and storage procedures for hazardous wastes.
- Packaging, labeling, and on-site movement of hazardous wastes.

- Hazardous waste and pollution control devices and permits.
- Spill and emergency procedures, emergency equipment, and emergency systems.
- Explosive Hazardous Waste Generators are also required to have Waste Military Munitions Awareness Training.

#### Spill Response - Awareness Level:

- An understanding of what hazardous substances are, and the risks associated with them in an incident.
- An understanding of the potential outcomes associated with an emergency created when hazardous substances are present.
- The ability to recognize the presence of hazardous substances in an emergency.
- The ability to identify the hazardous substances, if possible.
- An understanding of the Hazardous Material worker's role in the Center's emergency response plan, including site security and control, and the U.S. Department of Transportation's Emergency Response Guidebook.
- Abilities to realize the need for additional resources, and to make appropriate notifications to the appropriate response personnel.
- Key points of contact, their telephone numbers, and area of responsibility.
- During the Annual Refresher, the target audience shall demonstrate competency in the Spill Response - Awareness Level training by passing a written examination covering the above mentioned topics.

# (2) Explosive TSDF Worker/Operator Training

Target Audience:	Permitted explosives hazardous waste treatment unit's personnel:
<u>Length of Training</u> :	Initial - 24 hours (On-line Training Module or sufficient training/experience to objectively demonstrate competency in the topics listed below.)
	Refresher - 8 hours or sufficient training/experience to objectively demonstrate competency.
Frequency of Training:	The Initial Training will be provided within six months of the employees hire date. The Refresher will be provided annually thereafter.

#### **Topics Included:**

- a. Federal, State, Local, Army, and Navy hazardous waste regulations, policies, practices, and instructions.
- b. Properties of hazardous materials and hazardous wastes.
- c. Safe handling and storage procedures for hazardous wastes.
- d. Packaging, labeling, and on-site movement of hazardous wastes.
- e. Names of personnel and alternates responsible for site safety and health.
- f. Use of personal protective equipment.
- g. Work practices by which the employee can minimize risks from hazards.
- h. Safe use of engineering controls and equipment on the site, including materials handling and personal protective equipment.
- i. Medical surveillance requirements, including recognition of symptoms and signs which might indicate overexposure to hazards.

- j. Contents of the site safety and health plan.
- k. Spill and emergency procedures, emergency equipment, and emergency systems.
- 1. Waste Military Munitions Awareness Training
- m. During the Annual Refresher, training shall include the topics covered in (a) through (l), listed above, and updates of requirements local, state, and federal.

# (3) Hazardous Waste TSDF Worker/Operator; Spill Response - Technician/Specialist Level; and Department of Transportation, 40 CFR 172.704.

Target Audience: Environmental Protection Workers/Manager.

Length of Training: Initial - 24 hours and

Refresher - 8 hours.

<u>Frequency of Training</u>: The Initial Training will be provided within six months of the employee's hire date. The Refresher course will be provided annually thereafter.

# Topics Included:

Hazardous Waste Handlers Training:

- (a) Federal, State, Local, Army, and Navy hazardous waste regulations, policies, practices, and instructions.
- (b) Properties of hazardous materials and hazardous wastes.
- (c) Safe handling and storage procedures for hazardous wastes.
- (d) Packaging, labeling, and on-site movement of hazardous wastes.
- (e) Names of personnel and alternates responsible for site safety and health.
- (f) Use of personal protective equipment.
- (g) Work practices by which the employee can minimize risks from hazards.
- (h) Safe use of engineering controls and equipment on the site, including materials handling and personal protective equipment.
- (i) Medical surveillance requirements, including recognition of symptoms and signs which might indicate overexposure to hazards.
- (j) Contents of the site safety and health plan.
- (k) Spill and emergency procedures, emergency equipment, and emergency systems.
- (1) During the Annual Refresher, training shall include review of topics covered in (a) through (k), listed above.

Spill Response - Technician/Specialist Level:

- (a) Knowledge of how to implement the Center's emergency response plan.
- (b) Safe operating procedures established to be used at the incident scene; emergency equipment, and emergency systems.
- (c) Recognition of health and safety hazards to protect themselves and other employees.
- (d) Understanding of in-depth hazard and risk assessment techniques.
- (e) Knowledge of the classification, identification and verification of known and unknown materials by using advanced survey instruments and equipment.
- (f) Selection and use of appropriate personal protective equipment.
- (g) Techniques of coordination with other employees to minimize risk.

- (h) Performance of advance control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available.
- (i) Ability to determine and implement decontamination procedures.
- (j) Understanding termination procedures.
- (k) Understanding basic chemical, radiological and toxicological terminology and behavior.
- (1) Appropriate response to over exposure from health hazards or injury to themselves and other employees.
- (m) Medical surveillance requirements, including recognition of subsequent symptoms and signs which may result from overexposures.
- (n) Familiarity of the state response plan.
- (o) Contents of the Occupational Safety and Health Manual. Have the ability to develop a site safety and control plan.
- (p) During the Annual Refresher, the target audience shall demonstrate competency in the Spill Response Technician/Specialist Level training by passing a written examination covering the topics in (a) through (o), listed above.

**DOT Training:** 

- (a) General awareness of the requirements of 49 CFR 172.704 and its job impact.
- (b) Recognition and identification of Hazardous Materials consistent with the hazards communication standards Part 172.200 of 49 CFR.
- (c) Classification of Hazardous Materials
- (d) Recognition and use of labels, placards and markings.
- (e) Requirements for shipping papers.
- (f) Familiarization of DOT Emergency Response Guide.
- (g) Safe work practices in handling Hazardous Materials.
- (h) During the Annual Refresher, training shall include a review of the contents of (a) through (g), listed above, including current changes and amendments to DOT HW/HM regulations.

#### (4) Spill Response – Operations Level Training

Target Audience:Fire Department, Hospital Corpsmen, Occupational Health Nurses, Medical<br/>Doctors, Police Officers, Shift Duty Officers, Guard Lieutenants, Police<br/>Captains, and Command Duty Officers.

These employees respond to releases or potential releases of hazardous substances as part of the initial response to the site for protecting nearby persons, property, or the environment from the effects of the release. Their function shall be to contain the release from a safe distance, keep it from spreading, and prevent exposures.

Length of Training:	Initial – 8 hours and
	Refresher – 1 hour
Frequency of Training:	The Initial Training will be provided within six months of the employee's hire
	date. The Refresher course will be provided annually thereafter.

# Topics Included:

- (a) Knowledge of the basic hazard and risk assessment techniques.
- (b) Knowledge of how to select and use proper personal protective equipment provided.

- (c) Understanding basic hazardous materials terms.
- (d) Knowledge of how to perform basic control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available.
- (e) Knowledge of how to implement basic decontamination procedures.
- (f) Understanding the local operating procedures and termination procedures. Understanding the Hazardous Material worker's role in the Center's emergency response plan.
- (g) Abilities to realize the need for additional resources, and to make appropriate notifications to the appropriate response personnel.
- (h) Key points of contact, their telephone numbers and area of responsibility.
- (i) During the Annual Refresher, the target audience shall demonstrate competency in the Spill Response Operations Level training by passing a written examination covering the topics in (a) through (h), listed above.

# (5) HAZMAT/Spill Response – Technician/Specialist Level

 Target Audience:
 Fire Prevention/Protection Personnel and Emergency Medical Technicians.

 Length of Training:
 Initial – 24 hours and

 Frequency of Training:
 Refresher – 8 hours.

 Frequency of Training:
 The Initial Training will be provided within six months of the employee's hire

date. The Refresher Course will be provided annually thereafter.

# **Topics Included:**

Analyzing the Incident:

- (a) Detecting the presence of Hazardous Materials The student shall, given various facility and/or transportation situations, with and without hazardous materials present, identify those situations where hazardous materials are present.
- (b) Surveying the Hazardous Materials Incident The student shall, given examples of facility and transportation situations involving hazardous materials:
  - (1) Identify the hazardous materials(s) in each situation by name, UN/NA identification number, and/or placard applied.
  - (2) Survey the hazardous materials incident to identify the containers and materials involved, whether hazardous materials have been released, and the surrounding conditions.
  - (3) Identify special containers involved and, given the appropriate equipment, identify or classify unknown materials, verify the identity of hazardous materials, and determine the concentration of hazardous materials.
- (c) Collecting and Interpreting Hazard and Response Information The student shall, given the identity of various hazardous materials, identify the fire, explosion, and health hazard information for each material using the current edition of the Emergency Response Guidebook.
- (d) Describing the Condition of the Container Involved in the Incident The student shall, given simulated facility and transportation container damage, describe the damage found using one of the following terms:
  - Undamaged, no product release:
  - Damaged, no product release;

- Damaged, product release; or
- Undamaged, product release.
- (e) Predicting the Behavior of a Material and Its Container The student shall, given examples of facility and transportation hazardous material, and given examples of both facility and transportation incidents involving multiple hazardous materials, predict the likely behavior of the contents in each case.
- (f) Estimating the Potential Harm The student shall estimate the potential harm within the endangered area at a hazardous materials incident.
- (g) Estimating the Size of an Endangered Area The student shall, given various facility and transportation hazardous materials incidents, estimate the size, shape, and concentrations associated with the materials involved in the incident using computer modeling, monitoring equipment, or specialists in this field.

Planning the Response:

- (a) Describing Response Objectives for Hazardous Materials Incidents The student shall, given simulated facility and transportation problems, describe the response objectives for each problem.
- (b) Identifying Potential Action Options The student shall, given simulated facility and transportation hazardous materials incidents, identify the possible action options by response objective for each problem.
- (c) Determining Appropriateness of Personal Protective Equipment The student shall, given the name of the hazardous material involved and the anticipated type of exposure, determine whether available personal protective equipment is appropriate for implementing a defensive option, and given situations with known and unknown hazardous materials, determine the appropriate personal protective equipment for the action options specified in the plan of action in each situation.
- (d) Identifying and Developing Appropriate Decontamination Procedures The student shall identify emergency decontamination procedures and, given a simulated hazardous materials incident, select an appropriate decontamination procedure and determine the equipment required to implement that procedure.
- (e) Developing a Plan of Action The student shall, given simulated hazardous materials incidents in facility and transportation settings, develop a plan of action, including safety considerations. The plan shall be consistent with the local emergency response plan and the organization's standard operating procedures and be within the capability of available personnel, personal protective equipment, and control equipment for that incident.

Implementing the Planned Response:

- (a) Initiating Protective Actions The student shall, given examples of facility and transportation hazardous materials incidents, identify the actions to be taken to protect themselves and others and to control access to the scene using the local emergency response plan, the organization's standard operating procedures, or the current edition of the Emergency Response Guidebook.
- (b) Initiating the Notification Process The student shall, given either a facility or transportation scenario of hazardous materials incidents, identify the appropriate notifications to be made and how to make them, consistent with the local emergency response plan or the organization's standard operating procedures.
- (c) Establishing and Enforcing Scene Control Procedures The student shall, given scenarios for facility and/or transportation hazardous materials incidents, identify how to

establish and enforce scene control including control zones, emergency decontamination, and communications.

- (d) Performing Incident Management Duties The student shall, given a role within the local incident management system for hazardous materials incidents, demonstrate how to perform the functions and responsibilities of the first responder at the awareness and operational levels and of the hazardous materials technician.
- (e) Using Protective Clothing and Respiratory Protection The student shall demonstrate the ability to don, work in, and doff both liquid splash and vapor-protective clothing and any other specialized personal equipment provided by the authority having jurisdiction, with the appropriate respiratory protection.
- (f) Performing Defensive Control Actions The student shall, given a plan of action for a hazardous materials incident within his or her capabilities, demonstrate the ability to perform the defensive control actions set out in the plan.
- (g) Performing Control Functions Identified in Plan of Action The student shall, given various simulated hazardous materials incidents involving nonbulk and bulk packaging and facility containers, select the tools, equipment, and materials for the control of hazardous materials incidents and identify the precautions for controlling releases from those packaging/containers.

# **Evaluating Progress:**

- (a) Identifying the considerations for evaluating whether defensive options are effective in accomplishing the objectives.
- (b) Describing the circumstances under which it would be prudent to pull back from a hazardous materials incident.
- (c) Communicating the Status of the Planned Response The student shall communicate the status of the planned response to the incident commander and other response personnel.

# Annual Refresher:

During the Annual Refresher, the target audience shall demonstrate competency in the HAZMAT/Spill Response – Technician/Specialist Level training by passing a written examination covering all topics listed above.

# (6) HAZMAT/Spill Response – Incident Commander Training (Initial) [IAW National Incident Interagency Management System (NIIMS)]; and HAZMAT/Spill Response –Incident Commander Training (Annual Refresher)

Target Audience:Fire Chief, Assistant Fire Chiefs, and Fire Captains.Length of Training:Initial – 24 hours and<br/>Refresher – 1 hour.Frequency of Training:The Initial Training will be provided within six months of the employee's hire<br/>date. The Refresher course will be provided annually thereafter.Topics Included:Topics Included:

# Analyzing the Incident:

(a) Detecting the Presence of Hazardous Materials – The student shall, given various facility and/or transportation situations, with and without hazardous materials present, identify those situations where hazardous materials are present.

- (b) Surveying the Hazardous Materials Incident The student shall, given examples of facility and transportation situations involving hazardous materials:
  - (1) Identify the hazardous material(s) in each situation by name, UN/NA identification number, and/or placard applied;
  - (2) Survey the hazardous materials incident to identify the containers and materials involved, whether hazardous materials have been released and the surrounding conditions; and
  - (3) Identify special containers involved and, given the appropriate equipment identify or classify unknown materials; verify the identity of hazardous material, and determine the concentration of hazardous materials.
- (c) Collecting and Interpreting Hazard and Response Information The student shall, given the identity of various hazardous materials, identify the fire, explosion, and health hazard information for each material using the current edition of the Emergency Response Guidebook.
- (d) Describing the Condition of the Container Involved in the Incident The student shall, given simulated facility and transportation container damage, describe the damage found using one of the following terms:
  - Undamaged, no product release;
  - Damaged, no product release;
  - Damaged, product release; or
  - Undamaged, product release.
- (e) Predicting the Behavior of a Material and Its Container The student shall, given examples of facility and transportation hazardous materials incidents involving a single hazardous material, and given examples of both facility and transportation incidents involving multiple hazardous materials, predict the likely behavior of the contents in each case.
- (f) Estimating the Potential Harm The student shall estimate the potential harm within the endangered area at a hazardous materials incident.
- (g) Estimating the Size of an Endangered Area The student shall, given various facility and transportation hazardous materials incidents, estimate the size, shape, and concentrations associated with the materials involved in the incident using computer modeling monitoring equipment, or specialists in this field.

Planning the Response:

- (a) Describing Response Objectives for Hazardous Materials Incidents The student shall, given simulated facility and transportation problems, describe the response objectives for each problem.
- (b) Identifying Potential Action Options The student shall, given simulated facility and transportation hazardous materials incidents, identify the possible action options by response objective for each problem.
- (c) Determining Appropriateness of Personal Protective Equipment The student shall, given the name of the hazardous material involved and the anticipated type of exposure, determine whether available personal protective equipment is appropriate for implementing a defensive option, and given situations with known and unknown hazardous materials, determine the appropriate personal protective equipment for the action options specified in the plan of action in each situation.

- (d) Identifying and Developing Appropriate Decontamination Procedures The student shall identify emergency decontamination procedures and, given a simulated hazardous materials incident, select an appropriate decontamination procedure and determine the equipment required to implement that procedure.
- (e) Developing a Plan of Action The student shall, given simulated hazardous materials incidents in facility and transportation settings, develop a plan of action, including safety considerations. The plan shall be consistent with the local emergency response plan and the organization's standard operating procedures, be within the capability of available personnel, personal protective equipment, and control equipment for that incident.

#### Implementing the Planned Response:

- (a) Initiating Protective Actions The student shall, given examples of facility and transportation hazardous materials incidents, identify the actions to be taken to protect themselves and others and to control access to the scene using the local emergency response plan, the organizations' standard operating procedures, or the current edition of the Emergency Response Guidebook.
- (b) Initiating the Notification Process The student shall, given either a facility or transportation scenario of hazardous materials incidents, identify the appropriate notifications to be made and how to make them, consistent with the local emergency response plan or the organization's standard operating procedures.
- (c) Establishing and Enforcing Scene Control Procedures The student shall, given scenarios for facility and/or transportation hazardous materials incidents, identity how to establish and enforce scene control including control zones, emergency decontamination, and communications.
- (d) Performing Incident Management Duties The student shall, given a role within the local incident management system for hazardous materials incidents, demonstrate how to perform the functions and responsibilities of the first responder at the awareness and operational levels and of the hazardous materials technician.
- (e) Using Protective Clothing and Respiratory Protection- The student shall demonstrate the ability to don, work in and doff both liquid splash- and vapor-protective clothing and any other specialized personal equipment provided by the authority having jurisdiction, with the appropriate respiratory protection.
- (f) Performing Defensive Control Actions The student shall, given a plan of action for a hazardous materials incident within his or her capabilities, demonstrate the ability to perform the defensive control actions set out in the plan.
- (g) Performing Control functions Identified in Plan of Action The student shall, given various simulated hazardous materials incidents involving nonbulk and bulk packaging and facility containers, select the tools, equipment, and materials of the control of hazardous materials incidents and identify the precautions for controlling releases from those packaging/containers.

#### Evaluating Progress:

- (a) Identifying the considerations for evaluating whether defensive options are effective in accomplishing the objectives.
- (b) Describing the circumstances under which it would be prudent to pull back from a hazardous materials incident.
- (c) Communicating the Status of the Planned Response The student shall communicate the status of the planned response to the incident commander and other response personnel.

# <u>Annual Refresher</u>:

During the Annual Refresher, the target audience shall demonstrate competency in the HAZMAT/Spill Response – On-Scene Incident Commander training by passing a written examination covering all topics listed above.

# (7) Spill Response Simulated Incident Scenarios

Target Audience:Fire Chiefs, Assistant Fire Chiefs, Fire Captains, Fire Prevention/Protection<br/>Personnel, Emergency Medical Technicians, Command Duty Officers, Police<br/>Officers, Shift Duty Officers, Guard Lieutenants, Police Captains, Emergency<br/>Medical Technicians, Hospital Corpsmen, Occupational Health Nurses, Medical<br/>Doctors, Environmental Protection Workers/Managers, Industrial Hygienists, and<br/>the Joint Exercise Team (JET).

Length of Training: 4 hours.

<u>Frequency of Training:</u> Quarterly the first year, semiannual the following years.

Scenarios Included:

- (a) Noncompatibles stored overnight, one leaker.
- (b) A degreaser incident; personal injury involving chemical spill on legs.
- (c) Circuit board plating shop incident (upstairs); material leaking downstairs.
- (d) A laboratory incident involving a carcinogen release in the lab.
- (e) TDI spill in non-explosive area.
- (f) TDI spill in explosive area.
- (g) Over one gallon reportable.

Simulated Incident Scenarios shall include:

- (a) All team members necessary for the particular scenario.
- (b) Practicing the mechanics of spill response.
- (c) Constructive critiques of Emergency Response Team.
- (8) Miscellaneous
  - (a) Written Hazardous Waste Management and Minimization:

All Activities covered by this permit have written instructions on Hazardous Waste Management and Minimization at generator sites. The purpose of these instructions is to provide guidance regarding proper hazardous waste management operations. These instructions are used and referred to during all hazardous waste management training sessions.

(b) Written Hazardous Waste Procedures:

All Activities covered by this permit have written instructions on Hazardous Waste Procedures. The purpose of these procedures is to provide guidance and assign responsibility for the proper handling, containerization, labeling, and spill clean up at hazardous waste generator sites. Also included are instructions for recordkeeping.

(c) Written Standard Operating Procedures (SOP):

Before their incorporation, procedures for all operations dealing with waste ordnance, production operations (painting, plating shops, etc.) and all operational manuals associated with related equipment usage are approved and/or reviewed by safety,

industrial hygiene, and environmental protection personnel, in addition to engineering and technical representatives. Changes in any procedures or operations must also be approved by these groups and reviewed with employees by supervision.

The Standard Operating Procedures (SOP) spell out how the wastes generated by the operation are to be handled and disposed, and whether they are a solid waste or a hazardous waste. The procedure for reporting spills is also outlined in the SOP. The operators/workers for each operation are required to review the SOP pertaining to that operation and sign a statement declaring that they understand how to perform the operations in accordance with the written SOP.

The SOP identifies the type of protective clothing, respiratory protective devices, hearing protection and safety eyewear that should be worn when working in the operations. Industrial Hygiene and Safety, when reviewing the SOP, note what operations or personnel may require special training, such as respirators, protective clothing, etc., and assure that personnel receive required training recertification/retraining yearly.

# H-1a Job Title/Job Description

The following describes personnel, their job titles and job descriptions related to their duties associated with RCRA activities.

- (1) <u>Environmental Site Manager</u> The Environmental Site Manger coordinates the development and implementation of CRANE's Environmental Protection Program, ensuring compliance with the U.S. Environmental Protection Agency and the State of Indiana laws and regulations. This individual serves as the Senior Environmental personnel for CRANE and its tenant commands. The responsibilities include:
  - Assuring technical adequacy of plans, designs, and specifications for proposed modifications or improvements of existing or new construction of domestic and industrial waste treatment and water supply, distribution, and storage facilities for CRANE and its tenant commands;

Advising on the interpretation and implementation of (and compliance with) environmental policy directives and programs that embrace a range of subjects directly or indirectly concerned with public safety and/or protection of the environment;

- Reviews new or revised policy directives, regulations or program materials of higher headquarters or regulatory agencies;
- Develops and distributes procedural guides or instructions for implementation and compliance by the Center;
- Coordinates actions and obtaining of funding to meet Corrective Action requirements;
- Reviews Military Construction projects and provides comments, as required, ensuring that necessary provisions to meet environmental standards are included;
- Determines funding requirements for Environmental Protection; and
- Develops budget plans, requests, and execution of plans that reflect those requirements.

(2) <u>CAAA Environmental Protection Specialist</u> – The incumbent performs overall coordination of CAAA's Environmental Protection efforts between CAAA Directorates, NSA Crane, and other military organizations. The incumbent will be the Activity's single point of contact for all inquiries received by CAAA concerning environmental issues. The incumbent will prepare/coordinate all written responses to correspondence received by CAAA pertaining to environmental protection. The incumbent will coordinate efforts with assigned CAAA Project Engineers, as required for technical support on specific projects or programs.

- (3) <u>Environmental Protection Specialist(s)</u> Assists the Environmental Site Manager in the development, implementation and administration of a complete environmental protection program for CRANE and temporarily act as manager of Environmental Protection as needed. These individuals play an active role in the execution of the following programs:
  - Waste water and storm water Management,
  - Air pollution source surveys and permitting,
  - Hazardous Materials/Waste Management,
  - Underground Storage Tank Management,
  - Asbestos & PCB management,
  - Installation Restoration program,
  - Pollution Prevention and Environmental Management Systems

These individuals are responsible for:

- Inspecting operational facilities for compliance in specific areas of expertise;
- Coordinating waste shipments;
- Coordinating abatement of lead and asbestos;
- Coordinating investigative sampling;
- Interaction with regulators during permitting and compliance visits;
- Coordinating regulatory reporting
- Conducting Environmental Compliance Audits of all Process/Production facilities to determine compliance with the Environmental Regulations;
- Assisting the Environmental Site Manager in preparing permit applications, closure plans, annual reports and management plans;
- Responding to chemical or oil spill at CRANE, the incumbent may serve as a member of the spill cleanup team and could serve as the On-Scene Spill Cleanup Coordinator after all emergency situations have been mitigated;
- Resolving routine and complex environmental problems that arise on a day-to-day basis;
- Reviewing standard operating procedures and test procedures, work requests, project submittals, contract specifications, and planned or proposed facility modifications to determine the potential environmental impact of these operations on the environment; and
- Preparing technical specifications for all hazardous waste disposal contracts.
- (4) <u>Hazardous Waste Handler(s)</u> –Environmental Protection has the responsibility for the collection, transport, and shipment of hazardous waste. These duties involve:
  - Collecting of waste from satellite accumulation sites;
  - Transporting the waste to the CSF for shipment off Center by a chemical waste disposal contractor
  - Monitoring the disposal contractor's efforts to ascertain compliance with regulations;
  - Maintain appropriate records; and
  - Performing routine inspections of satellite storage facilities and the CSF.
- (5) <u>Industrial Engineering Technicians/Project Engineers</u> The focus for this position is to:

- Write operating procedures and test authorizations for production and demilitarization operations;
- Change them accordingly;
- Review the set-up of these operation lines;
- Demonstrate operations/reviewing procedures for supervisors of the facilities to familiarize them with the processes and steps involved;
- Initiate procurement of equipment and oversee installation of this equipment; and
- Prepare associated designs for production and demilitarization operations.
- (6) Explosives Operators (includes leaders and supervisors) Functions are to:
  - Defuse and demilitarize projectiles, boxed ammunition, bag charges, and rockets;
  - Demilitarize ordnance by incineration in the SPAM and APE 1236 incinerator, detonation in the CDC and Demolition Range, burning in the ABG or ORR, and a mixture of steam/water or drilling; and
  - Operate motor vehicle storage transport ordnance to production and/or demilitarization facilities for treatment.
- (7) Explosives Workers (includes leaders and supervisors) These personnel are involved in the operation of demilitarization; they move material and components from storage area to production area; and assist the explosives operator in preparing ordnance for demilitarization. Included in the position description of personnel listed in (6) through (8) above is the following: "The incumbent has the responsibility for handling ordnance waste in accordance with all hazardous waste regulations as outlined in related test or operating procedures, authorizations, disposition forms and other such related directives."
- (8) <u>Miscellaneous Classifications of Personnel</u> These classifications include corollary duties involving the handling of hazardous waste at satellite sites:
  - Preservation and Packing Leader/Foreman
  - Chemist
  - Electroplating Worker
  - Electronics Equipment Specialist
  - Automotive Mechanic Foreman
  - Fork Lift Operator
  - Heavy Equipment Mechanic Leader
  - Electronics Technician
  - Boiler Plant Operator/Foreman
  - Materials Expeditor
  - Ordnance Equipment Repairer Foreman
  - Explosives Test Operator Foreman
  - Materials Handling Foreman
  - Engineering Technician
  - Quality Assurance Specialist

Included in their position descriptions is the following statement concerning their duties involving hazardous waste: "In addition to the specified duties of the position, the incumbent requests storage containers compatible with the waste in question from Environmental Protection; labels the containers with a CRANE hazardous waste label in accordance with instructions provided;

maintains associated records on the identity of the waste, the concentrations of chemicals involved and volume generated per unit of time; ascertains that waste is not stored at the satellite site for longer than 90 days; and/or arranges for timely collection of waste through Environmental Protection."

# H-1b Training Content, Frequency, and Techniques

All personnel, listed in Section H-1a., who directly manage hazardous waste receive at least one scheduled Hazardous Waste Management class (see Section H-1). Other personnel who deal with any part of the hazardous waste management program will receive Environmental Awareness Training which addresses hazardous waste management. The Hazardous Waste Management classes include Initial Instruction and Annual Refreshers, and are offered online all year, so that all required personnel are thus ensured of attending a session within six months of their hire date, or after being transferred to a new position within CRANE. Examinations may be used to determine a student's pass/fail performance. Courses that require certain federal or state certifications may require inclusion of knowledge or skill objective testing. Unless otherwise stated, each student must achieve a grade of 70 percent or higher to be eligible for a course completion certificate. Employees will not work in unsupervised positions until they have successfully completed the training requirements for their respective positions.

Explosives Operators and Explosives Workers (see Section H-1a., (6) and (7)) receive annual certification training. This regulation establishes a training, medical, and certification program for munitions wage grade personnel. Personnel working on explosives operations shall be knowledgeable of ordnance, well trained in ordnance safety and meet physical requirements of the certification program. The program is designed to increase the munitions safety awareness, technical knowledge, and operational proficiency of affected employees. This complete regulation is contained in **Exhibit H-1**.

The miscellaneous classifications of personnel, which include corollary duties involving hazardous wastes, are found in Section H-1a. Guidance for fulfilling these duties is outlined in <u>Exhibit H-1</u> and in the Hazardous Waste Management classes offered on Center. Personnel in these job series who are not trained, certified or otherwise qualified as required by these regulations will not be utilized in Explosive Munitions Operations.

# H-1c Training Director

Personnel training may be accomplished using resources of all Activities covered by this permit and government contractor. Typically, training is provided by activity personnel that have been trained in hazardous waste management and have specific knowledge of the activities conducted on center. Should a government contractor be used for training, the contract will require documentation that the contractor is familiar with the procedures and requirements associated with activities on center.

# H-1d Relevance of Training to Job Position

The training that the Environmental Protection Specialists and the Hazardous Waste Handlers receive applies directly to their positions. The aforementioned personnel deal with hazardous program on a daily basis; therefore, it occupies a large percentage of their job. The training received by other personnel in Section H-1a applies directly to their work and involvement in the Hazardous Waste Management Program.

# H-1e Training for Emergency Response

The regular members of the Emergency Spill Response Team (SRT) include the following:

(1) CRANE Fire Department personnel.

If necessary, CRANE Environmental Protection personnel, Public Works shop personnel, Explosive Ordnance Disposal (EOD) Detachment, the CRANE Medical Department, Industrial Hygiene, and Security will be notified for additional assistance. Such assistance would be consistent with their regular duties. CRANE's Disaster Preparedness Plan addresses the duties of the above groups in case of a major incident.

Hazardous Waste Training Courses are outlined in Section H-1, of this attachment. Specific classes pertaining to Spill Response include Initial and Annual Refresher Spill Response – Operations Level Training, Initial and Annual Refresher HAZMAT/Spill Response – Technician/Specialist Level, Initial and Annual Refresher HAZMAT/Spill Response – On-Scene Incident Commander Training, and Spill Response Simulated Incident Scenarios.

# H-2 Implementation of Training Program

The Hazardous Waste Management Plan, in regard to training, states, All Departments will:

- (1) Ensure that all personnel involved in any aspect of hazardous waste management attend appropriate hazardous waste management courses identified in the instruction; and
- (2) Include all related hazardous waste assignments in the position descriptions of pertinent personnel.

The Hazardous Waste Management Plan, in regard to training states, Environmental Protection will ensure training is coordinated with Employee Development, and make training available.

All classroom instructions (on and off Center) are recorded in each individual's training record on a computerized report and/or an Explosive Certification Record, as applicable. Such monitoring assures that all required personnel are notified and receive all necessary training.

Training records on current personnel will be kept until closure of the facility. Training records on former employees will be kept for at least three years from the date the employee last worked at the facility.

# I. CLOSURE PLANS, POST-CLOSURE PLANS, AND FINANCIAL REQUIREMENTS

Closure plans for each of the treatment and storage facilities are presented in Section I of each attachment. It is the intent of NSWC Crane to conduct closure activities, whereby, All hazardous wastes will be treated, removed off-site, or disposed of on-site within 90 days from the receipt of the final volume of waste at the unit or facility; and all closure activities will be completed within 180 days from the receipt of the final volume of the final volume of waste at the unit or facility.

# J. CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

# J-1 Solid Waste Management Units

Information relevant to solid waste management units is presented in the various attachments. In general, no additional information is presented in this section of the attachments. However, land use controls (LUC) may be implemented as a corrective action for a solid waste management unit. In such an event, CRANE will follow the following procedure:

When LUC will comprise a part of the final remedy for any solid waste management units (SWMU) or Area of Concern (AOC), the Permittee shall prepare and submit a Land Use

Control Implementation Plan (LUCIP) as part of a Corrective Measures Implementation (CMI) Work Plan for that site. Where a CMI Work Plan is not warranted and upon approval of the Department, a LUCIP may be submitted in lieu of a CMI Work Plan. The CMI Work Plan or LUCIP shall provide information concerning the LUC(s) selected, including how such controls will be implemented, monitored, maintained, reported, and enforced. At a minimum, the CMI Work Plan or LUCIP shall address the following:

- 1. Identification of the objective(s) of the LUC;
- 2. Those actions required to achieve each identified objective, including but not limited to, restricting public access to an area for recreational use;
- 3. Actions required to maintain the LUC which may be included by reference;
- 4. How each LUC will be monitored to ensure its continuing protectiveness which may be included by reference;
- 5. The frequency of reporting on the integrity and protectiveness of the LUC under the standards outlined in the Statement of Basis which may be included by reference;
- 6. The entity(ies) responsible for implementing, maintaining, monitoring and enforcing the LUC; and,
- 7. A commitment for reporting to IDEM and taking prompt corrective action in the event of a breach of the LUC.
- 8. A commitment to report to IDEM any planned major land use change(s) or planned conveyance(s) of the property encompassing any SWMU or AOC to a third party.

SITE NO.	NAME	STATUS
SWMU 01/12	Mustard Gas Burial Grounds (MGBG)	LTM
SWMU 02/11	Dye Burial Grounds (DBG)	LTM
SWMU 03/10	Ammunition Burning Grounds/Jeep Trail Area (ABG)	CMS
SWMU 04/02	McComish Gorge (MCG)	CMS
SWMU 05/03	Old Burn Pit (OBP)	CMS
SWMU 06/09	Demolition Area (DEMO)	NFA <sup>4</sup>
SWMU 07/09	Old Rifle Range (ORR)	CMS
SWMU 08/17	Load and Fill Area, B-106 Pond (B106P)	SB
SWMU 09/05	Pesticide Control Area/R-150 Tank (PCA)	RFI
SWMU 10/15	Rockeye (RKI)	LTM
SWMU 11/00	Old Storage Building, B-225 (B225)	RFI
SWMU 12/14	Mine Fill A (MFA)	RFI
SWMU 13/14	Mine Fill B (MFB)	RFI
SWMU 14/00	Sanitary Landfill and Lithium Battery Burial (SLF&LB)	NFA <sup>4</sup>
SWMU 15/06	Roads and Grounds Area (R&GA)	NFA <sup>4</sup>
SWMU 16/16	Cast High Explosives Fill/B146 Incinerator (B146)	RFI

This section applies to the SWMUs, which are listed in the following table:

SWMU 17/04	PCB Capacitor Burial & Pole Yard (PCB-PY)	RFI
SWMU 18/13	Load and Fill Area Buildings (L&FAB)	RFI
SWMU 19/00	Pyrotechnic Test Area/Annex/Rocket Range Impact Area (PTA)	NS
SWMU 20/00	CAAA QA/QC Test Area (CAAA)	RFI
SWMU 21/00	DRMO Storage Lot (DRMO)	RFI
SWMU 22/00	Lead Azide (PbA)	NFA
SWMU 23/00	Battery Shop (BS)	RFI
SWMU 24/00	Sludge Drying Beds A & B (SDBA&B)	NFA <sup>4</sup>
SWMU 25/07D	Highway 58 Dump Site A (H58A)	NFA
SWMU 26/08D	Highway 58 Dump Site B (H58B)	NFA
SWMU 27/00	Illuminant Building B-126 (B126)	NFA
SWMU 28/00	Maintenance Shop, B-1820 (B1820)	NFA
SWMU 29/07	PCP Dip Tank, B-56 (B56)	RFI
SWMU 30/00	Land Farm (LF) Sludge Application Site	NFA <sup>4</sup>
SWMU 31/00	Compressed Gas Cylinder Site (CGC)	NFA <sup>4</sup>
SWMU 32/00	Tank Farm (TF)	NFA
SWMU 33/00	Bioremediation Facility (BRF)	NFA <sup>4</sup>
SWMU 34/00	Old Gun Tub Storage Lot (OGTSL)	RFI
AOC 01/00	Grit Blast Site – B3220 (GBS)	NS
UXO 05/00	B-2044 Drop Tower/Test Rail (B2044)	NFA
UXO 06/00	Test Pads on Hill West of B198	NFA <sup>4</sup>
UXO 07/00	Old Rifle Range (Ranges and Berms)	RFI
UXO 08/00	Pyro Area Test Burn Pads	RFI
UXO 09/00	Unknown Source Area North of SWMU 22	RFA

CMS = Corrective Measures Study

LTM = Long-Term Monitoring;

NFA = No Further Action (i.e., based upon current conditions and knowledge of the site, there is no further clean up required under RCRA Corrective Action).

NS = Not Started (i.e., site remediation activities are not yet funded).

RFA = RCRA Facility Assessment

RFI = RCRA Facility Investigation

SB = Statement of Basis

Exhibit J-1 is a drawing of the facility showing the location of all the SWMUs and AOC's.

# J-2 Releases

The following subsections describe sites and the potential for releases.

# J-2(a) SWMU 01/12 MUSTARD GAS BURIAL GROUNDS (MGBG)

The site was previously used to bury mustard gas burial rounds, chemical agent identification sets, and small quantities of thorium nitrate used for flares. Two previous investigations have removed all materials from this site. A RCRA Facility Investigation (RFI) incorporating a baseline human health and a screening level ecological risk assessment (RA) has been completed for all media. Risk drivers are from volatile organics in ground water. A Corrective Measures Study (CMS) has been prepared recommending monitored natural attenuation (MNA) and land use controls (LUCs). A Statement of Basis (SB) and a Corrective Measures Implementation Plan (CMIP) have been approved by the U. S. EPA and IDEM. The site is currently in long term monitoring (LTM).

# J-2(b) SWMU 02/11 DYE BURIAL GROUNDS (DBG)

Approximately 50 tons of pyrotechnic dyes were buried at this site. An RFI incorporating a baseline human health and a screening level ecological RA was prepared for all media as well as a CMS. A RCRA cap has been placed as an Interim Measure (IM). The CMS determined the cap can be used as a final remedy and recommended LUCs and ground water monitoring. A SB and CMIP have been approved by the U. S. EPA. The site is currently in long term monitoring (LTM).

#### J-2(c) SWMU 03/10 AMMUNITION BURNING GROUNDS (ABG)

This unit consists of a permitted open burning unit (ABG), the Old Jeep Trail (OJT) area which is a former open burning area, and the Little Sulphur Creek (LSC). Burning at the ABG and OJT originally took place in trenches, pits, and on the ground resulting in metals, solvents, and explosives contamination of the soils, ground water, and LSC. A multimedia RFI incorporating a baseline human health and a screening level ecological RA/CMS has been completed for the ABG, Little Sulphur Creek (LSC), and Old Jeep Trail (OJT) area. Explosives and solvents in ground water and explosives in surface water below Spring A are the human health risk drivers. A CMS for the OJT and LSC is in preparation. Much of the CMS hinged on acceptance or rejection of the proposed alternate concentration limit (ACL) for RDX in surface water. The ACL (86  $\mu$ g/L) was approved in December 2005 along with the RFI/RA for LSC and OJT. Three Surface Impoundments, formerly used for dewatering explosives, and the Ash Pile have undergone partial closure. The ABG main treatment area, including the Surface Impoundments and Ash Pile, will be addressed during closure of the unit. Ground water compliance monitoring is addressed under the Subpart X permit provisions.

# J-2(d) SWMU 04/02 McCOMISH GORGE (McG)

Undefined amounts and types of garbage and trash were buried at this site. Burial likely included wood, paper, construction material, plaster-filled warheads, metal shavings, and industrial wastes. Previous work has partially delineated the extent of the debris. A multimedia RFI/RA report has been completed. No excess risks were identified. The CMS report was approved by the U.S. EPA and a SB is expected to be approved in late 2012 with a recommendation for LUCs.

#### J-2(e) SWMU 05/03 OLD BURN PIT (OBP)

The Old Burn Pit encompasses a narrow stream valley where material was burned in a depression or pit and the ash and metallic objects were buried in a gully to the north of the burning pit. The rubbish included wood, paper, building material, and industrial wastes. Previous work has included soil and ground water sampling and removal of some of the debris. A multimedia RFI/RA report has been completed. A CMS was submitted to the U. S. EPA to address excess human health and ecological risks from metals contamination. The OBP has two distinct physiographic areas; a gully area and a flat area. No excess risks have been identified in the flat area of the OBP and the Navy will request release of this area for unrestricted use, especially since the OBP is unencumbered by ESQD arcs and located near a major highway. The gully area however, appears to have excess risk from contaminants and is in an area of rugged terrain. An IM to remove surface debris and a metals hot spot was completed in 2010.A CMS has been submitted to the U.S. EPA.

# J-2(f) SWMU 06/09 DEMOLITION AREA (DEMO)

High-explosives waste munitions are disposed of by detonation at this site. Previous work has included soil and ground water sampling. Sedimentation ponds and surface runoff ponds are in place. The U.S. EPA reviewed and approved RFI planning documents and the subsequent report. The results defined a manganese hotspot in the ground water. The U. S. EPA determined there is no need for corrective action at this unit. The manganese hotspot work will be deferred until unit closure, if required at that time. Additionally, the sedimentation pond on the northwest side was briefly used for pyrotechnic testing. The sedimentation pond has been designated as UXO 2, H-333 Sedimentation Pond. Testing was reportedly limited and included only a few pyrotechnic items. Investigation of the pond is deferred and will be included with the closure of the Demolition Range. A No Further Action request has been approved. Ground water detection monitoring is ongoing under the Subpart X permit provisions.

# J-2(g) SWMU 07/09 OLD RIFLE RANGE (ORR)

SWMU 7 currently consists of three engineered containment burning pits operated under a RCRA Subpart X Permit. Each pit has several burning pans in which "Yellow D" explosive and other explosive contaminated material is burned. Prior to July 1986, burning was conducted on open ground. This area was also utilized for bomb cook-off testing. High explosive (yellow D/ammonium picrate) bulk and loaded projectiles are burned in clay lined steel pans. It was reported that black powder, red, and white phosphorous had been destroyed in this area. A multimedia RFI delineated soil contamination (predominantly metals) at the ORR . A TNT soil hot spot was removed under an IM. TNT and RDX are present in the ground water at the site. Originally, SWMU 7 covered 28 acres which also included the multiple former pistol, rifle, and shotgun ranges in the area adjoining the pans. However, changes to the Navy's Environmental Restoration program, including the standup of the Munitions Response Program (MRP) has led to the redefinition of the SWMU 7 boundary to just include the open-burning treatment units and the associated contaminated ground water. The former ranges are now addressed as UXO 7. Additional SWMU 7 investigations will be required at unit closure. Ground water compliance monitoring is addressed under the Subpart X Permit. An SB and CMIP are planned for late 2012.

# J-2(h) SWMU 08/17 LOAD AND FILL AREA, B-106 POND (B106)

Building 106 contains a cleaning process, consisting of a caustic wash, a degreaser, and an acid wash. Prior to 1972, this wastewater was discharged into a small unlined retention pond. The retention pond overflowed into surface drainage. Sometime after 1972 the pond was connected to a neutralizing system that discharged to the sanitary sewer. In 1981, cooling water from degreasers was discharged to a storm drain until the discharge was connected to the sanitary sewer in 1982. Building 107 floor drains also discharged to the pond. An RFI is currently underway to address all media. High chlorinated solvent concentrations have been found in the pond sediments. An RFI report is in preparation. An interim measures removal of the pond sediments was conducted in 2007. A CMP and SB have been approved by IDEM. The site is in LTM.

#### J-2(i) SWMU 09/05 PESTICIDE CONTROL AREA/ R-150 TANK SITE (PCA)

This site consists of three relatively distinct areas: a former waste underground storage tank, known as the R-150 Tank (removed); and two former pesticide mixing and storage buildings (Buildings 2189 and 55). Multimedia RFI/RA sampling has been completed for the R-150 Tank and B2189 and some excess risks were identified in ground water for chlorinated VOCs and metals at the R-150 Tank site and B2189. A draft RFI/RA report has been submitted to U.S. EPA. A CMS is in preparation for the R-150 Tank and B2189. An RFI/RA is ongoing at the B55 site, where elevated levels of pesticides, PCBs, and fuel oil constituents have been identified. An IM removal of contaminated soils from the B55 area began in 2008 and was completed in 2012. In addition, four underground storage tanks (USTs) were identified. The tanks are constructed of concrete. Two of the tanks are located adjacent to the east side of the B150 boiler house and contained fuel oil. Fuel oil contamination was aslo found during an excavation attempting to determine whether or not a third UST was present at B150 (the third UST was likely removed in 1997). The other two USTs are located on the south end of the former B55 lot and were associated with a vehicle fueling area. The contents of the two B55 fuel tanks are unknown, but presumably may have contained diesel fuel and gasoline. The USTs and fuel oil contaminated soils were removed in 2013. IDEM concurred in June 2013 that no additional actions were required regarding the USTs, The final RFI and Interim Measures Report (IMR) are in review by Navy and the U.S. EPA.

# J-2(j) SWMU 10/15 ROCKEYE (RKI)

Previous work has shown both soil and ground water contamination. IM composting treated 1,273 tons of explosives contaminated soils at the Crane Bioremediation Facility (CBF). An RFI has been completed. The final CMS was submitted to the U. S. EPA in 2006 to address an explosives plume in ground water. The CMS recommended alternative included three major components: (1) natural attenuation, (2) land use controls (LUCs), and (3) monitoring. Natural attenuation would rely on naturally occurring processes such as biodegradation, dispersion and dilution through ground water movement, and adsorption onto soil particles to reduce the concentrations of explosives. Processes for implementing LUCs would be included in the Corrective Measures Implementation Plan (CMIP) to restrict ground water use. As part of the LUCs, annual site inspections are conducted to verify and enforce the continued application of these controls. Monitoring consists of biennial collection of ground water and surface water samples and analyzing them for explosives to evaluate the progress of remediation and to verify that no plume expansion is occurring. Preliminary estimations indicate that the remediation timeframe would probably be somewhat greater than 100 years. The U.S. EPA approved the CMS in 2006. This proposed remedy was submitted for public comment as a SB. A Final CMIP was approved by the U. S. EPA in 2008. The site is in LTM.

#### J-2(k) SWMU 11/00 OLD STORAGE, B-225 (B225)

This was the site of Building 225, which was destroyed by a fire on 13 July 1976. Stored at the building were pentachlorophenol, paints, sodium fluorescein dye, solvents, and various other items. Debris from the fire was cleaned up and the site currently remains vacant. RFI sampling for all media was conducted in 2011. IDEM approved the RFI report with recommendations to be addressed in the CMS. The CMS is in preparation.

J-2(l) SWMU 12/14 MINE FILL A (MFA)

This area was used primarily for melting and pouring explosives. Contamination from past operations includes soil, surface water, sediments, and ground water. IM composting treated 20,834 tons of explosives contaminated soils at the CBF. An IM source removal was conducted for the adjacent Battery Dump Site and a report is in preparation. An RFI/RA report is in preparation for MFA. IM removals for lead contaminated soils from the Battery Dump Site were conducted in September 2001, June 2002, September 2002, and October 2009. As a result of the IMs, approximately 18 tons of explosives contaminated soil and 848 tons of metals contaminated soil were removed from the site. The IMR was submitted to the U.S. EPA in 2010.

# J-2(m) SWMU 13/14 MINE FILL B (MFB)

This area was used primarily for melting and pouring explosives and differed only slightly from operations at MFA. A Therminol Boiler containing PCBs was located at MFB and removed in 1990. Contamination from past operations includes soil, sediments, and possibly ground water. IM composting treated 22,115 tons of explosives contaminated soils at the CBF. An RFI/RA report is in preparation. An IM to remove PCB contaminated soils and sediments was completed in July 2010. Approximately 5310 tons of PCB contaminated soils were sent for offsite disposal (1354 tons TSCA and 3956 tons non-TSCA). An IMR was submitted to the U.S. EPA in 2011.

# J-2(n) SWMU 14/00 SANITARY LANDFILL/LITHIUM BATTERY BURIAL (SL&LB)

Lithium batteries originally buried at the site that is now the Bioremediation Facility (SWMU 33) have been removed by IM. U.S.EPA has approved a request for No Further Action.

# J-2(o) SWMU 15/06 ROADS AND GROUNDS AREA (R&GA)

This SWMU consists of an assortment of buildings used to store fuels, oils, and pesticides in support of the maintenance of the facilities' roads and grounds. An asphalt batch plant was also located here prior to 1972. Furthermore, an assortment of material was deposited into two ravines. The material was construction rubble and other debris including fuel oil tanks. The unknown contents of this site, along with the pesticide residues, indicate that the site could potentially have contaminants in the soil that could migrate to surface water or ground water. A paved parking area was approved as an IM to limit leaching of contaminants to ground water. An additional IM was implemented to remove the hillside debris. An RFI/RA sampling effort recently focused on soils, surface water, and sediment. Little contamination was found. An RFI report was approved by the IDEM. IDEM has approved a request for No Further Action.

# J-2(p) SWMU 16/16 CAST HIGH EXPLOSIVES FILL/B146 INCINERATOR (B146)

This complex has been used for loading, demilitarization, and renovation of a variety of munitions. An ash pile and settling basins (sumps) were present at the site. A variety of contaminants have been released to the soil, sediments, surface water, and ground water. IM work removed large quantities of contaminated soil and sludge and treated chlorinated solvent contaminated water flowing into 2 sumps. A multimedia RFI identified significant chlorinated organic contamination in subsurface soils and ground water. An RFI report is in preparation. An IM removal of TCE and lead contaminated soils was completed in January 2014. The RFI Report and VI Report are in process.

# J-2(q) SWMU 17/04 PCB CAPACITOR BURIAL/POLE YARD (PCB-PY)

Poles and transformers are stored in this area. Reportedly, PCB capacitors were also buried here. Two separate attempts have been unsuccessful in locating the buried capacitors. IM sampling identified PCB contamination in soils. Subsequently, an IM was conducted to remove up to 24 inches of
PCB-contaminated soils. Over 3,000 tons of soil were excavated and disposed off-site in 2003. Additional RFI sampling lead to identification of additional PCB contaminated sediments in a tributary to Boggs Creek. Lake Gallimore, located at the southern boundary of Crane, is formed by a dam on Boggs Creek. In 2007, the U.S. Fish and Wildlife Service collected fish tissue samples for PCB analysis from Lake Gallimore. Results indicated minimal downstream transport of PCBs from SWMU 17. Additional IM excavations were conducted in 2013 and 2014 to remove PCB-contaminated soil and sediment. While implementing the 2014 phase, additional PCB contamination was discovered at the top of what is known as "Ditch 3". Field work is ongoing to define the extent of PCB contamination in and around this newly discovered area as well as to determine the extent of recontamination of Ditch 3. Further remediation is planned for Fall 2015/Spring 2016..

### J-2(r) SWMU 18/13 LOAD AND FILL AREA BUILDINGS (L&FAB)

This was the site of explosives load and fill operations, and is currently used for renovation, rework, and loading of munitions items. Explosives and metals contamination exist in the soil, sediments, surface water, and possibly ground water. This SWMU also included test pads on the hill behind B-198. The test pads were originally to be investigated as part of SWMU 18. However, munitions response program funding became available and the test pads were investigated in September 2009 (see UXO 06 below).

SWMU 18 covers approximately 1 square mile and includes over 100 buildings. In order to more efficiently investigate the site, SWMU 18 has been divided into ten subareas based on similar operations and geographic proximity. The ten subareas are as follows:

- 1. Subarea A: Buildings 101, 102, and 103
- 2. Subarea B: Building 104
- 3. Subarea C: Building 105
- 4. Subarea D: Inert Operation Area
- 5. Subarea E: Building 200
- 6. Subarea F: Buildings 2084 and 2085
- 7. Subarea G: Applied Science Division (ASD) I Area
- 8. Subarea H: Building 198
- 9. Subarea I: ASD II Area
- 10. Subarea J: Special Program Area

The subareas will be prioritized and investigated accordingly as funding is available. An RFI is planned to address all media at each of the subareas. This RFI fieldwork has been conducted and an RFI report is in preparation.

*J-2(s)* SWMU 19/00 PYROTECHNIC TEST AREA/ANNEX/ROCKET RANGE IMPACT AREA (PTA) This site is also known as the Ordnance Test Area and consists of three physically separate areas [the Ordnance Test Area (OTA), OTA Annex, and Rocket Range] that perform related functions. Each area consists of a large open field and a concrete building used for quality assurance test burning of pyrotechnic lots. Boggs Creek flows through the center of or nearby each area. Contamination from pyrotechnic testing includes chlorates, dyes, oxidizers, fuels, and other by-products of flares and smoke. In addition, low-level radioactive material may be present in the soils at the OTA Annex due to an accidental release of thorium in 1984. An RFI work plan has been prepared for the site, but field work is not currently scheduled. In 2004, the site was declared ineligible for ER,N funding.

# *J-2(t)* SWMU 20/00 CAAA Quality Assurance Quality Control (QA/QC) TEST AREA (CAAA) Quality Assurance/Quality Control (QA/QC) testing of pyrotechnics devices is conducted at Building 2167. A 1979 Army Environmental Hygiene Agency report stated that lead chromate contamination was suspected due to the testing MARK1-3 flares. There is an indication of stressed vegetation from past operations. The presence of dead trees was originally thought to be due to contaminants from operations. Subsequently, it was determined the trees had died due to drought conditions. In 2004, the site was declared ineligible for ER,N funding. In 2010, Crane Army Ammunition Activity received funding for the RFI. Fieldwork was conducted in 2012. The results of the investigation demonstrated a general absence of contamination and recommended No Further Action. IDEM approved the recommendation on July 2, 2013.

# J-2(u) SWMU 21/00 DRMO STORAGE LOT (DRMO)

This SWMU is a level gravel pad which is approximately a 20 acre area. It is used as a scrap metal salvage area. Metal shavings containing cutting oil are placed on a pad, which collects the oil for recycling. Prior to the late 1960's the oil in metal shavings drained onto the ground in the area. RFI fieldwork began in 2011. After the identification of numerous areas with lead, polycyclic aromatic hydrocarbons, and PCB contamination were identified, and IM was initiated in 2015.

# J-2(v) SWMU 22/00 LEAD AZIDE (PbAz)

This SWMU is an unlined pond that received wastewater containing lead salts. The pond was closed in 1981, and contaminated effluent and soil were removed. An RFI demonstrated no excess risks from the site. However, during the investigation, a potential, previously unknown upgradient source of contamination was indicated. This potential new site will be addressed as UXO 9. The No Further Action recommendation for SWMU 22 was approved by IDEM on September 2, 2014.

# J-2(w) SWMU 23/00 BATTERY SHOP (BS)

Spent battery acid and waste oil from forklift servicing was disposed by allowing it to flow down the hill onto a bank behind the Battery Shop (Building 36). Surface drainage from the bank flowed into a storm drain, which drains into Lake Greenwood. As an IM, surface debris was removed from the hillside and land filled as trash. RFI fieldwork began in 2012 and indicated a need for an IM. The IM was completed in December 2014. An IMR is in progress.

### J-2(x) SWMU 24/00 SLUDGE DRYING BEDS A & B (SDBA&B)

This SWMU consisted of cells that were used for sewage sludge drying prior to land application of the sludge. The sludge applied was apparently produced prior to the treatment system that is currently in place, and may have contained certain hazardous constituents from industrial effluent. As an Interim Measure, the sludge/soils of sludge beds A and B were characterized. Sludge bed A was considered not contaminated. A section of sludge bed B was contaminated with a slight amount of DDT. Under an IM, the entire sludge bed B area was excavated and removed including the chain link fence and concrete retaining walls. A request for a No Further Action determination has been approved by the U. S. EPA.

# J-2(y) SWMU 25/07D HIGHWAY 58 DUMP SITE A (H58A)

Debris at this site consists of paper; cardboard containers; empty containers of paints, thinners, lubrication and hydraulic fluids; scrap metal; concrete block; and transite. This site has undergone an IM partial debris removal. The debris was contaminated with asbestos, and was therefore disposed as a special waste at an offsite permitted landfill. Debris removal was not completed due to concerns of undermining Highway 58. Site renovation included backfilling, seeding, and mulching to prevent soil erosion. RFI fieldwork was completed in 2011. The fieldwork included soil and ground water sampling. Soil borings were emplaced along both sides of H58 to determine the extent of debris used as fill. The results verified that the road was not underlain by debris and that the dump area was constrained to the ravine and slopes adjacent to the road. Elevated metals were detected in ground water samples, but were deemed to be due to the presence of coal seams within the Pennsylvanian aquifer. Since no receptor risks were identified, a recommendation of No Further Action was made in the RFI Report. IDEM approved the recommendation on September 25, 2014.

### J-2(z) SWMU 26/08D HIGHWAY 58 DUMP SITE B (H58B)

This is a dump site at the base of a massive sandstone outcrop (probable former quarry). The debris consisted of paper; cardboard containers; empty containers of paints, thinners, lubrication and hydraulic fluids; scrap metal containers and drums; corrugated pipe, and transite siding. Fifteen crushed and rusted drums (contents unknown) were seen at the site. An IM removed all of the waste down to bedrock, and a request for a determination of No Further Action required for the soils has been approved by U.S.EPA. An RFI conducted in 2011, investigated impacts to the ground water. An NFA request was approved for ground water by IDEM in 2011.

### J-2(aa) SWMU 27/00 ILLUMINANT BUILDING B-126 (B126)

Contamination at this site includes red phosphorous, chlorates, dyes, oxidizers, and fuels for flares and smoke munitions. The building used sump pits (in-ground open rectangular concrete tanks) which were pumped out by trucks and taken to the burning grounds. All sump overflows drained into the Boggs Creek watershed. A metal plating shop utilizing metals, caustics, acids, and cyanides is also present nearby. Significant heavy metal contamination (zinc and cadmium) has been experienced from wastewater being discharged into open ditches. There are also burn areas; one behind Building 126 and one across Highway 5. RFI fieldwork was completed in 2011. The RFI report recommended removal of the eight settling tanks. An IM was conducted to remove the concrete tanks in 2013. Subsequent to the removal of the eight settling tanks, IDEM approved the recommendation for No Further Action on March 24, 2014.

### J-2(bb) SWMU 28/00 MAINTENANCE SHOP, B-1820 (B1820)

This is an automotive repair shop. Adjacent to the building was a large metal drip pan on wooden posts, which drained into an underground waste oil storage tank. Waste oil from various drip pans and gallon jugs were emptied and washed in the metal drip pan. The ground beneath the unit was covered with oil stains. An RFI report for all media was submitted to IDEM with a recommendation for NFA and IDEM approved the NFA proposal in 2012.

J-2(cc) SWMU 29/00 PCP DIP TANK, B-56 (B56)

The PCP Dip Tank was used for dipping untreated wood into pentachlorophenol. The building also contains some solvent storage tanks. An RFI will investigate impacts to all media and the need for remedial action. RFI fieldwork was completed in 2011.

# J-2(dd) SWMU 30/00 LAND FARM (LF)

This SWMU consists of 18 miles of roadside where liquid sludge from the sewage treatment plant was land applied. The sludges were potentially contaminated with plating wastes. Sludge that accumulated was spread along 18 miles of roadside by a vacuum truck. Subsequently, CRANE began land applying sludge on a permitted 2.5-acre site. Land application ceased in the late 1990s. An RFI to address the potential impact on the ground water was conducted. The field work was in the 2.5-acre Land Farm area. The results of this work would be used to determine the need for activity along the 18 miles of roadside. Ground water and soil/sludge samples were collected leading to the conclusion that no excess risk existed from the previous application of sludges. A request for a NFA determination has been approved by the U. S. EPA.

# J-2(ee) SWMU 31/00 COMPRESSED GAS CYLINDER SITE (CGC)

This was an abandoned compressed gas cylinder disposal area adjacent to Building 64. An interim removal measure remediated the site in 1990. Based on the currently available information no further corrective measures are required at this site.

# J-2(ff) SWMU 32/00 TANK FARM

This site has had at least one release. The tanks have been removed. A draft RFI report was submitted to IDEM in 2011. An IM to remove an area of soil contaminated with benzo(a)pyrene was concluded in 2012. The subsequent RFI recommended NFA for the site. The No Further Actopm request was approved by IDEM on March 13, 2013.

# J-2(gg) SWMU 33/00 BIOREMEDIATION FACILITY (BRF)

This SWMU is an inactive treatment facility. The facility was decontaminated at the end of the CBF project. A No Further Action determination has been approved by the U.S. EPA.

# J-2(hh) SWMU 34/00 OLD GUN TUB STORAGE LOT (OGTSL)

The site was reportedly used 1950s for open storage of various types of combat ready materials, such as vehicles, bomb trailers, weather- proof containers of various hardwares, light and heavy gun mounts, etc. Beginning in the late 1960s, the site was used for open storage of gun tubs. Storage ceased in 2001 when the gun tubs were dismantled and sold for scrap metal. Paint from the gun tubs may have contained lead and chromates. Gun tub electronics and hydraulics may have contained PCBs. An RFI is planned for 2012.

# J-2(ii) AOC 01/00 GRIT BLAST SITE - B3220 (GBS)

The unenclosed Building 3220 was used for grit blast removal of old paint from railroad cars. Waste material was allowed to fall on the ground contaminating the area. The waste material that was generated from the grit blasting consisted of residual grit blast material and paint chips that contained regulated chromium levels, and probably lead. A considerable amount of the waste material was placed together creating a non-permitted hazardous waste pile containing a D007 waste. The waste pile has since been

removed and a closure plan for the remaining area has been implemented. A Revised Draft Remediation Recommendations report has been submitted to the U. S. EPA.

### J-2(jj) UXO 05/00 B-2044 Drop Tower/Test Rail (B2044)

Used from 1951 through 1973 for the drop testing of 20-mm cartridges as well as functional testing of cartridge actuated devices (CADs) and propellant actuated devices (PADs) used in ejection seats. The site consists of a drop tower approximately 100 feet tall and a test rail approximately 97 feet in length. The 20-mm cartridges were dropped from the tower onto a concrete pad. The CADs and PADs were tested on the test rail. An RFI investigated impacts to all media and the need for remedial action. Originally listed as AOC 02, a site investigation was conducted in 2007 under an approved workplan as UXO 5. An No Further Action request was approved by IDEM in March 2009.

#### J-2(kk) UXO 06/00 Test Pads on Hill West of B198

This site is situated in the middle of a cleared woodland area east of B-198. Aerial photography indicates the existence of the clearing back to at least 1952. However, no documentation has been found indicating testing operations prior to the mid-1970s. From 1983 to 1985 the site was used for the development and testing of safe disposal methods for various types of dyes. Test procedures also indicate that a 2.75-inch colored target marker and an M18 smoke hand grenade were also tested at UXO 06. The site consisted of two circular sand covered test pads (approximately 21-feet in diameter) underlain with PVC drainage pipe leading to a small concrete holding tank (approximately 1,000 gallons). A site investigation was conducted in September 2009. No contamination was found and a request for NFA was approved by IDEM in September 2010.

### *J-2(ll)* Old Rifle Range (Ranges and Berms)

UXO 7 consists of a 500-yard rifle range, a south pistol range, a north pistol range, trap range, and a skeet range. The area covered by the ranges is approximately 16 acres. Originally, UXO 7 was part of SWMU 7. However, changes to the Navy's Environmental Restoration program, including the standup of the Munitions Response Program led to the creation of a separate unit in order to address the ranges. In addition, an IM removal was conducted at the north pistol range [also known as the Old Pistol Range (OPR)] as part of SWMU 7. Under this IM, 290 tons of lead contaminated soil was removed from two backstops at the OPR. The additional ranges were investigated under the MRP in late 2007. In 2009, a draft of the UXO RFI report was submitted to the U.S. EPA. An IM to remove lead and polycyclic aromatic hydrocarbon contaminated soils was completed in May 2014, resulting in the off-site disposal of 6,560 tons of soil.

### J-2(mm) Pyro Area Test Burn Pads

UXO 8 lies within SWMU 27 west of B-126. Two square concrete basins that are approximately 5-feet deep and 6-foot across, were apparently used since the early 1950s to test various types of pyrotechnics. A site investigation was conducted in September 2009. Low levels of explosives were found in the residue in the concrete basins and RDX was detected at low concentrations in 1 subsurface soil sample outside the basins. In addition, low concentrations of Solvent Green 3 and Solvent Yellow 3 were detected in the basin residues and Solvent Green 3 was detected at low concentrations in one downgradient soil sample. An IM removed the basins and soil residue in August 2011. The resulting IMR recommended NFA and was approved by IDEM in 2011.

J-2(nn) SWMU 35/00 – Closed Sanitary Landfill

SWMU 35 was created to provide for the long-term post-closure maintenance and monitoring of the Crane Sanitary Landfill (SLF). Operations at the SLF were conducted under Permit Number 51-2. The site reached capacity and was officially closed on April 15, 2009. Post-closure monitoring activities (e.g., ground water, leachate pond, methane, etc.) are on-going.

*J-2(00)* SWMU 36/00 - Subareas 18.A, G, I, and J SWMU 36 was created in 2013 from SWMU 18 Subareas A, G, I, and J. The specific buildings are as follows:

Subarea A: Building 105 Area Subarea G: Applied Science Department (ASD) I Area Subarea I: Building 200 Area Subarea J: ASD II Area

The RFI fieldwork for SWMU 36 began in 2011.

*J-2(pp)* SWMU 37/00 - Subareas 18.D, E, and H SWMU 37 was created in 2013 from SWMU 18 Subareas D, E, and H. The specific buildings are as follows:

# J-3 Corrective Action Scope of Work

The corrective action for the facility includes discrete elements. The scope of work for each of the elements is specified below. All work plans and reports are subject to approval by the Indiana Department of Environmental Management (IDEM). Any of the information that has been submitted in the Part B Permit Application may be incorporated by reference in the required work plans and reports.

# **INTERIM MEASURES (IM)**

The Permittee shall prepare an Interim Measure Work Plan, as necessary. The work plan shall include the development of several plans which shall be prepared concurrently.

# A. Interim Measure Objectives

The IM Work Plan shall specify the objectives of the interim measure, demonstrate how the interim measure will abate releases and threatened releases, and to the extent possible, be consistent and integrated with any long-term solution at the facility. The IM Work Plan will include a discussion of the technical approach, engineering design, engineering plans, schedules, budget, and personnel. The IM Work Plan will also include a description of qualifications of personnel performing or directing the interim measure, including contractor personnel. This IM Work Plan shall also document the overall management approach to the interim measures.

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# B. <u>RCRA Facility Investigation Work Plan</u>

The RCRA Facility Investigation (RFI) Work Plan shall incorporate all interim measure activities under the Health and Safety Plan and the Community Relations Plan.

C. <u>Reports</u>

At the completion of the interim measure, the Permittee shall submit to IDEM a report which documents all interim measure activities.

# **RCRA FACILITY INVESTIGATION (RFI)**

The purpose of the RFI is to determine the nature and extent of releases of hazardous waste or hazardous constituents from regulated units, solid waste management units (SWMUs), and other source areas at the facility, and to gather all necessary data to support the Corrective Measure Study. The Permittee shall furnish all personnel, materials, and services necessary for, or incidental to, performing the RFI. The RFI consists of five (5) tasks, which are described below.

<u>Task One</u> :	Description of Current Conditions		
	A.	Facility Background	
	В.	Nature and Extent of Contamination	
	C.	Implementation of Interim Measures	
<u>Task Two</u> :	RFI Work Plan Requirements		
	A.	Quality Assurance Project Plan	
	В.	Health and Safety Plan	
	C.	Community Relations Plan	
<u>Task Three</u> :	Facility Investigation		
	A.	Environmental Setting	
	В.	Source Characterization	
	C.	Contamination Characterization	
	D.	Potential Receptor Identification	
<u>Task Four</u> :	Investigation Analysis		

A. Data Analysis

# B. Protection Standards

## Task Five: Submittals

- A. Current Conditions Report and RFI Work Plan
- B. Progress Reports
- C. RFI Report

### Task One: Description of Current Conditions

The Permittee shall submit for IDEM approval a report providing the background information pertinent to the facility, contamination, and interim measures as set forth below. The data gathered during any previous investigations or inspections and other relevant data shall be included.

### A. <u>Facility Background</u>

The Permittee's report shall summarize the regional location, pertinent boundary features, general facility physiography, hydrogeology, and historical use of the facility for the treatment, storage or disposal of solid and hazardous waste. The Permittee's report shall include:

- 1. Maps depicting the following:
  - a. General geographic location, at least encompassing a five (5) mile radius;
  - b. Property lines, with the owners of all adjacent property clearly indicated;
  - c. Topography and surface drainage depicting all waterways, wetlands, flood plains, water features, drainage patterns, and surface-water containment areas;
  - d. All tanks, building, utilities, paved areas, easements, rights-of-way, and other features;
  - e. All solid or hazardous waste treatment, storage or disposal areas active after November 19, 1980;
  - f. All known past solid or hazardous waste treatment, storage or disposal areas regardless of whether they were active on November 19, 1980;

- g. All known past and present product and waste underground tanks or piping;
- h. Surrounding land uses (residential, commercial, agricultural, recreational); and
- i. The location of all residential, production, recovery, and ground water monitoring wells. These wells shall be clearly labeled and have ground and top of casing elevations and construction details included (include all known information on residential wells);
- j. Terrestrial habitat cover-types (i.e., vegetation communities) with emphasis on locating natural (undisturbed) areas;
- k. Wildlife nesting and foraging locations for locally "uncommon" mammals, birds, fish, benthos, etc. Threatened and endangered species possibly on or near the site should be identified as early as possible.

All maps shall be consistent with the requirements of 329 Indiana Administrative Code (IAC) 3.1-13-1

(40 CFR 270.14) and be of sufficient detail and accuracy to locate and report all current and future work performed at the site.

- 2. A history and description of ownership and operation, solid and hazardous waste generation, treatment, storage and disposal activities at the facility;
- 3. Approximate dates or periods of past product and waste spills, identification of the materials spilled, the amount spilled, the location where spilled, and a description of the response actions conducted (local, state, or federal response units or private parties), including any inspection reports or technical reports generated as a result of the response; and
- 4. A summary of past permits requested and/or received, any enforcement actions and their subsequent responses, and a list of documents and studies prepared for the facility along with a brief summary of their findings.

# B. Nature and Extent of Contamination

The Permittee shall include a summary describing the existing information on the nature and extent of contamination.

1. The Permittee's report shall summarize all possible source areas of contamination. This, at a minimum, should include all regulated units, solid waste management units, spill areas, and other suspected source areas of contamination. For each area, the Permittee shall identify the following:

- a. Location of unit/area (which shall be depicted on a facility map);
- b. Quantities of solid and hazardous wastes;
- c. Hazardous waste or constituents; and
- d. Identification of areas where additional information is necessary.
- 2. The Permittee shall prepare an assessment and description of the existing degree and extent of contamination. This should include:
  - a. Available monitoring data and qualitative information on locations and levels of contamination at the facility;
  - b. All potential migration pathways including information on geology, pedology, hydrogeology, physiography, hydrology, water quality, meteorology, and air quality;
  - c. The potential impacts on human health and the environment, including demography, ground water and surface water use, and land use; and
  - Habitats and species (including threatened and endangered species) potentially exposed to contaminants and any known or observed effects of site contaminants on biota, such as fish kills or other obvious impacts. Habitat description should be based on available information and a field reconnaissance by a trained ecologist. Experts on local flora and fauna should also be consulted.
- C. Implementation of Interim Measures

The Permittee's report shall document interim measures which were or are being undertaken at the facility. This shall include:

- 1. Objectives of the interim measure: how the measure is mitigating a potential threat to human health and the environment and/or is consistent with and integrated into any long term solution at the facility;
- 2. Design, construction, operation, and maintenance requirements;
- 3. Schedules for design, construction and monitoring; and
- 4. Schedule for progress reports.

# Task Two: RFI Work Plan Requirements

The Permittee shall prepare a RCRA Facility Investigation (RFI) Work Plan. This RFI Work Plan shall include the development of a Quality Assurance Project Plan, a Health and Safety Plan, and a Community Relations Plan. All plans shall be prepared and submitted concurrently. During the RCRA Facility Investigation, it may be necessary to revise the RFI Work Plan to increase or decrease the detail of information collected to accommodate the facility-specific situation. The RFI Work Plan includes the following:

# A. Quality Assurance Project Plan (QAPP)

The Permittee shall prepare a plan to document all monitoring procedures, sampling, field measurements, and sample analysis performed during the investigation to characterize the environmental setting, source, and contamination so as to ensure that all information, data, and resulting decisions are technically sound, statistically valid, and properly documented. The QAPP shall be consistent with the United States Environmental Protection Agency (U.S. EPA) *EPA Guidance for Quality Assurance Project Plans*, EPA/600/R-98/018, February 1998, Chapter One of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846, Third Edition, as amended by Update I, July 1992), and U.S. EPA' s "Guidance for the Data Quality Objectives Process", September 1994.

The QAPP must address:

- 1. Project management;
- 2. Data quality objectives;
- 3. Data collection quality assurance;
- 4. Sampling;
- 5. Field measurements;
- 6. Sample analysis; and
- 7. Data management.

After final approval of the QAPP by IDEM, the Permittee shall distribute the QAPP to each person/organization having a major responsibility for the proposed environmental measurements. This includes, but is not limited to, contractors, subcontractors, and each laboratory.

# B. <u>Health and Safety Plan</u>

The Permittee shall prepare a facility Health and Safety Plan.

- 1. Major elements of the Health and Safety Plan shall include:
  - a. Facility description including availability of resources such as roads, water supply, electricity and telephone service;
  - b. Describe the known hazards and evaluate the risks associated with possible incidents and with each activity conducted;
  - c. List key personnel and alternates responsible for site safety, response operations, and for protection of public health;
  - d. Delineate work area;
  - e. Describe levels of protection to be worn by personnel in work area;
  - f. Establish procedures to control site access;
  - g. Describe decontamination procedures for personnel and equipment;
  - h. Establish site emergency procedures;
  - i. Address emergency medical care for possible injuries and toxicological problems;
  - j. Describe requirements for an environmental surveillance program;
  - k. Specify any routine and special training required for responders; and
  - 1. Establish procedures for protecting workers from weather-related problems.
- 2. The facility Health and Safety Plan shall be consistent with:
  - a. OSHA regulations, particularly 29 CFR 1910 and 1926;
  - b. The National Institute for Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1998);

- c. U.S. EPA Order 1440.1-Respiratory Protection;
- d. U.S. EPA Order 1140.3-Health and Safety Requirements for Employees engaged in Field Activities;
- e. Facility Contingency Plan;
- f. U.S. EPA Standard Operating Safety Guide (1984);
- g. State and local regulations; and
- h. Other pertinent IDEM or U.S. EPA guidance.

### C. <u>Community Relations Plan</u>

The Permittee shall prepare a plan, for the dissemination of information to the public, regarding investigation activities and results.

### Task Three: Facility Investigation

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The Permittee shall conduct those investigations necessary to: characterize the facility; define the source; define the nature and extent of contamination; and identify actual or potential receptors.

The investigations should result in data of adequate technical quality to support the development and evaluation of the corrective measure alternative or alternatives during the Corrective Measure Study.

The site investigation activities shall follow the plans set forth in the RFI Work Plan. All sampling and analyses shall be conducted in accordance with the QAPP. All sampling locations shall be documented in a log and identified on a detailed site map.

### A. Environmental Setting

The Permittee shall collect information to supplement and verify existing information on the environmental setting at the facility. The Permittee shall characterize the following:

1. Hydrogeology

The Permittee shall conduct a program to evaluate hydrogeologic conditions at the facility. This program shall provide the following information:

- A description of the regional and facility specific geologic and hydrogeologic characteristics affecting ground water flow beneath the facility, including:
  - (1) Regional and facility-specific stratigraphy: description of strata including strike and dip, identification of stratigraphic contacts;
  - (2) Structural geology: description of local and regional structural features (e.g., folding, faulting, tilting, jointing, etc.);
  - (3) Depositional history;

a.

- (4) Identification and characterization of areas and amounts of recharge and discharge;
- (5) Regional and facility-specific ground water flow patterns; and
- (6) Characterize seasonal variations in the ground water flow regime.
- b. An analysis of any topographic features that might influence the ground water flow system. (Note: Stereographic analysis of aerial photographs may aid in this analysis).
- c. Based on field data, test, and cores, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways at the facility (i.e., the aquifers and any intervening saturated and unsaturated units), including:
  - (1) Hydraulic conductivity and porosity (total and effective);
  - (2) Lithology, grain size, sorting, degree of cementation;
  - (3) An interpretation of hydraulic interconnections or the lack thereof, between saturated zones; and
  - (4) The attenuation capacity and mechanisms of the natural earth materials (e.g., ion exchange capacity, organic carbon content, mineral content, etc.).
- d. Based on field studies and cores, structural geology and hydrogeologic cross sections showing the extent (depth, thickness, lateral extent) of hydrogeologic units which may be part of the migration pathways identifying:

- (1) Sand and gravel deposits in unconsolidated deposits;
- (2) Zones of fracturing or channeling in consolidated or unconsolidated deposits;
- (3) Zones of higher permeability or low permeability that might direct and restrict the flow of contaminants;
- (4) The uppermost aquifer: geologic formation, group of formations, or part of a formation capable of yielding a significant amount of ground water to wells or springs; and
- (5) Water-bearing zones above the first confining layer that may serve as a pathway for contaminant migration including perched zones of saturation.
- e. Based on data obtained from ground water monitoring wells and piezometers installed upgradient and downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring including:
  - (1) Water-level contour and/or potentiometric maps;
  - (2) Hydrologic cross sections showing vertical gradients;
  - (3) The flow system, including the vertical and horizontal components of flow; and
  - (4) Any temporal changes in hydraulic gradients, (e.g., seasonal influences).
- f. A description of manmade influences that may affect the hydrogeology of the site, identifying:
  - (1) Active and inactive local water-supply and production wells with an approximate rate and schedule of pumping; and
  - (2) Manmade hydraulic structures (pipelines, french drains, ditches, unlined ponds, septic tanks, National Pollutant Discharge Elimination System (NPDES) outfalls, retention areas, etc.).
- 2. Soils

The Permittee shall conduct a program to characterize the soil and rock units above the water table in the vicinity of the contaminant release(s). Such characterization shall include but not be limited to, the following information:

- a. United States Department of Agriculture (USDA) soil classification;
- b. Surface soil distribution;
- c. USDA soil profile;
- d. Transects of soil stratigraphy;
- e. Hydraulic conductivity (saturated and unsaturated);
- f. Relative permeability;
- g. Bulk density;
- h. Porosity;
- i. Soil sorptive capacity;
- j. Cation exchange capacity (CEC);
- k. Soil organic content;
- l. Soil pH;
- m. Particle size distribution;
- n. Depth of water table;
- o. Moisture content;
- p. Effect of stratification on unsaturated flow;
- q. Infiltration;
- r. Evapotranspiration;

- s. Storage capacity;
- t. Vertical flow rate; and
- u. Mineral content.
- 3. Surface Water and Sediment

The Permittee shall conduct a program to characterize the surface-water bodies in the vicinity of the facility. Such characterization shall include, but not be limited to, the following activities and information:

- a. Description of the intermittent and permanent surface-water bodies including:
  - (1) For lakes: location, elevation, surface area, in-flow, out-flow, depth, temperature stratification, and volume;
  - (2) For impoundments: location, elevation, surface area, depth, volume, freeboard, and purpose of impoundment;
  - (3) For streams, ditches, drains, swamps and channels: location, elevation, flow, velocity, depth, width, seasonal fluctuations, and flooding tendencies (i.e., 100-year and 500-year events):
  - (4) Drainage patterns; and
  - (5) Evapotranspiration.
- b. Description of the chemistry of the natural surface water and sediments. This includes determining the pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients (Ammonia (NH<sub>3</sub>), Nitrate (NO<sub>3</sub><sup>-1</sup>), Phosphate (PO<sub>4</sub><sup>-3</sup>), chemical oxygen demand, total organic carbon, specific contaminant concentrations, etc.
- c. Description of sediment characteristics including:
  - (1) Deposition area;
  - (2) Thickness profile; and

- (3) Physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.).
- 4. <u>Air</u>

The Permittee shall provide information characterizing the climate in the vicinity of the facility. Such information shall include, but not be limited to:

- (1) Annual and monthly rainfall averages; (2)Monthly temperature averages and extremes; (3) Wind speed and direction; Relative humidity/dew point; (4) (5) Atmospheric pressure; Evaporation data; (6) Development of inversions; and (7)(8) Climate extremes that have been known to occur in the vicinity of the facility, including frequency of occurrence. A description of topographic and manmade features which affect air flow and emission patterns, including: (1)Ridges or hills; Valleys; (2) (3) Surface water bodies (e.g., rivers, lakes, ponds, etc.); Wind breaks and forests; and (4) Buildings. (5)
- B. <u>Source Characterization</u>

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The Permittee shall collect analytical data to completely characterize the wastes and the areas where wastes have been placed, collected or removed including: type; quantity; physical form; disposition (containment or nature of deposits); and facility characteristics affecting release (e.g., facility security, engineered barriers, etc.). This shall include a discussion of the following specific characteristics, at each source area:

- 1. Unit/Disposal Area Characteristics:
  - a. Location of unit/disposal area;
  - b. Type of unit/disposal area;
  - c. Design features;
  - d. Operating practices (past and present);
  - e. Period of operation;
  - f. Age of unit/disposal area;
  - g. General physical conditions; and
  - h. Method used to close the unit/disposal area.
- 2. Waste Characteristics:
  - a. Type of waste placed in the unit;
    - (1) Hazardous classification (e.g., flammable, reactive, corrosive, oxidizing or reducing agent);
    - (2) Quantity; and
    - (3) Chemical composition.
  - b. Physical and chemical characteristics;
    - (1) Physical form (solid, liquid, gas);
    - (2) Physical description (e.g., powder, oily sludge);

- (3) Temperature;
- (4) pH;
- (5) General chemical class (e.g., acid, base, solvent);
- (6) Molecular weight;
- (7) Density;
- (8) Boiling point;
- (9) Viscosity;
- (10) Solubility in water;
- (11) Cohesiveness of the waste;
- (12) Vapor pressure; and
- (13) Flash point.
- c. Migration and dispersal characteristics of the waste;
  - (1) Sorption;
  - (2) Biodegradability, bioconcentration, biotransformation;
  - (3) Photodegradation rates;
  - (4) Hydrolysis rates; and
  - (5) Chemical transformations.

The Permittee shall document the procedures used in making the above determinations.

C. Contamination Characterization

The Permittee shall collect analytical data on ground water, soils, surface water, sediment, and subsurface gas contamination in the vicinity of the facility. This data shall be sufficient to define the extent, concentration, origin, direction, and rate of movement of contaminant plumes. Data shall include time and location of sampling, media sampled, and conditions during sampling, and the identity of the individuals performing the sampling and analysis. The Permittee shall address the following types of contamination at the facility.

### 1. Ground water Contamination

The Permittee shall conduct a Ground water Investigation to characterize any plumes of contamination at the facility. This investigation shall at a minimum provide the following information:

- a. A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility;
- b. The horizontal and vertical direction of contamination movement;
- c. The velocity of contaminant movement;
- d. The horizontal and vertical concentration profiles of all hazardous waste constituents in the plume(s);
- e. An evaluation of factors influencing the plume movement; and
- f. An extrapolation of future contaminant movement.

The Permittee shall document the procedures used in making the above determinations (e.g., well design, well construction, geophysics, modeling, etc.).

2. <u>Soil Contamination</u>

The Permittee shall conduct an investigation to characterize the contamination of the soil and rock units above the water table in the vicinity of the contaminant release. The investigation shall include the following information:

- a. A description of the vertical and horizontal extent of contamination;
- b. A description of contaminant and soil chemical properties within the contaminant source area and plume (including contaminant solubility, specification, adsorption, leachability, exchange capacity, biodegradability, hydrolysis, photolysis, oxidation and other factors that might affect contaminant migration and transformation);

- c. Specific contaminant concentrations;
- d. The velocity and direction of contaminant movement; and
- e. An extrapolation of future contaminant movement.

The Permittee shall document the procedures used in making the above determinations.

3. <u>Surface-water and Sediment Contamination</u>

The Permittee shall conduct a surface-water investigation to characterize contamination in surface-water bodies resulting from contaminant releases at the facility.

The investigation shall include, but not be limited to, the following information:

- a. A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility, and the extent of contamination in underlying sediments;
- b. The horizontal and vertical direction of contaminant movement;
- c. The contaminant velocity;
- d. An evaluation of the physical, biological and chemical factors influencing contaminant movement;
- e. An extrapolation of future contaminant movement; and
- f. A description of the chemistry of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, specific contaminant concentrations, etc.

The Permittee shall document the procedures used in making the above determinations.

4. <u>Air Contamination</u>

The Permittee shall conduct an investigation to characterize the particulate and gaseous contaminants released into the atmosphere. This investigation shall provide the following information:

- a. A description of the horizontal and vertical direction and velocity of contaminant movement;
- b. The rate and amount of the release; and
- c. The chemical and physical composition of the contaminant(s) released, including horizontal and vertical concentration profiles.

The Permittee shall document the procedures used in making the above determinations.

5. Subsurface Gas Contamination

The Permittee shall conduct an investigation to characterize subsurface gases emitted from buried hazardous waste and hazardous constituents in the ground water. This investigation shall include the following information:

- a. A description of the horizontal and vertical extent of subsurface gas migration;
- b. The chemical composition of the gases being emitted;
- c. The rate, amount, and density of the gases being emitted;
- d. Horizontal and vertical concentration profiles of the subsurface gases emitted.

The Permittee shall document the procedures used in making the above determinations.

## D. <u>Potential Receptors</u>

The Permittee shall collect data describing the human populations and environmental systems that are susceptible to contaminant exposure from the facility. Chemical analysis of biological samples may be needed. Data on observable effects in ecosystems may also be obtained. The following characteristics shall be identified.

1. Local uses and possible future uses of ground water:

- a. Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial); and
- b. Location of ground water users, including wells and discharge areas.
- 2. Local uses and possible future uses of surface waters draining the facility:
  - a. Domestic and municipal (e.g., potable and lawn/gardening watering);
  - b. Recreational (e.g., swimming, fishing);
  - c. Agricultural;
  - d. Industrial; and
  - e. Environmental (e.g., fish and wildlife propagation).
- 3. Human use of or access to the facility and adjacent lands, including but not limited to:
  - a. Recreation;
  - b. Hunting;
  - c. Residential;
  - d. Commercial;
  - e. Zoning; and
  - f. Relationship between population locations and prevailing wind direction.
- 4. A description of the biota in surface water bodies on, adjacent to, or affected by the facility.
- 5. A description of the ecology overlying and adjacent to the facility.
- 6. A demographic profile of the people who use or have access to the facility and adjacent land, including, but not limited to: age; sex; and sensitive subgroups.

7. A description of any endangered or threatened species near the facility.

# Task Four: Investigation Analysis

The Permittee shall prepare an analysis and summary of all facility investigations and their results. The objective of this task shall be to ensure that the investigation data are sufficient in quality (e.g., quality assurance procedures have been followed) and quantity to describe the nature and extent of contamination, potential threat to human health and/or the environment, and to support the Corrective Measure Study.

#### A. <u>Data Analysis</u>

The Permittee shall analyze all facility investigation data outlined in Task Three and prepare a report on the type and extent of contamination at the facility including sources and migration pathways. The report shall describe the extent of contamination (qualitative/quantitative) in relation to background levels indicative for the area.

- B. <u>Protection Standards</u>
  - 1. Ground water Protection Standards

For regulated units, the Permittee shall provide information to support IDEM's selection/development of Ground water Protection Standards for all hazardous waste found in the ground water during the Facility Investigation (Task Three).

- a. The Ground water Protection Standards shall consist of:
  - (1) For any constituents listed in 329 IAC 3.1-9-1 (40 CFR 264.94), the respective value given in that table (maximum level) if the background level of the constituent is below the value given; or
  - (2) The background level of any constituent in the ground water; or
  - (3) An approved Alternate Concentration Limit (ACL).
- b. Information to support IDEM's subsequent selection of Alternate Concentration Limits (ACL's) shall be developed by the Permittee in accordance with IDEM and U.S. EPA guidance. For any proposed ACL, the Permittee shall include a justification based upon the criteria set forth in 40 CFR 264.94(b).
- c. Within thirty (30) days of receipt of IDEM's notification of disapproval of any proposed ACL, the Permittee shall amend and submit revisions to IDEM.

2. Other Relevant Protection Standards

The Permittee shall identify all relevant and applicable standards for the protection of human health and the environment (e.g., National Ambient Air Quality Standards, Federally-approved state water quality standards, etc.).

# Task Five: <u>Submittals</u>

A. Current Conditions Report and RFI Work Plan

The Permittee shall submit to IDEM its Current Conditions Report (CCR) and RFI Work Plan. The CCR and RFI Work Plan are subject to IDEM approval.

# B. <u>Progress Reports</u>

The Permittee shall, at a minimum, provide IDEM with signed quarterly progress reports containing:

- 1. A description and estimate of the percentage of the RFI completed;
- 2. Summaries of <u>all</u> findings;
- 3. Summaries of <u>all</u> changes made in the RFI during the reporting period;
- 4. Summaries of <u>all</u> contacts with representatives of the local community, public interest groups, or State government during the reporting period;
- 5. Summaries of <u>all</u> problems or potential problems encountered during the reporting period;
- 6. Actions being taken to rectify problems;
- 7. Changes in personnel during the reporting period;
- 8. Projected work for the next reporting period; and
- 9. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.
- C. <u>RFI Report</u>

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The Permittee shall prepare an RFI Report to present the facility investigation and the investigation analysis. The RFI Report is subject to IDEM approval.

# **CORRECTIVE MEASURE STUDY (CMS)**

The purpose of the Corrective Measure Study (CMS) is to ensure that the Permittee develops and evaluates the corrective action alternative or alternatives and to recommend the corrective measure or measures to be taken at the facility. The Permittee will furnish the personnel, materials, and services necessary to prepare the Corrective Measure Study, except as otherwise specified.

The CMS consists of four tasks:

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<u>Task Six</u> :	Identification and Development of the Corrective Measure Alternative or Alternatives		
	А.	Description of Current Situation	
	В.	Establishment of Corrective Action Objectives	
	C.	Screening of Corrective Measure Technologies	
	D.	Identification of the Corrective Measure Alternative or Alternatives	
Task Seven:	<u>Evalu</u>	ation of the Corrective Measure Alternative or Alternatives	
	A.	Technical/Environmental/Human Health/Institutional	
	В.	Cost Estimate	
<u>Task Eight</u> :	<u>Justifi</u>	cation and Recommendation of the Corrective Measure or Measures	
	A.	Technical	
	В.	Environmental	
	C.	Human Health	
	D.	Cost	
Task Nine:	<u>Submi</u>	ittals	
	A.	Progress Reports	
	В.	CMS Report	
Task Six: Identi	fication	and Development of the Corrective Action Alternative or Alternatives	

Based on the results of the RFI, the Permittee shall identify, screen and develop the alternative or alternatives for removal, containment, treatment and/or other remediation of the contamination based on the objectives established for the corrective action.

# A. <u>Description of Current Situation</u>

The Permittee shall provide an update to information presented in Task One of the RFI to IDEM regarding previous response activities and any interim measures which have been

or are being implemented at the facility. The Permittee shall also make a facility-specific statement of the purpose for the response, based on the results of the RFI. The statement of purpose should identify the actual or potential exposure pathways that should be addressed by corrective measures.

# B. Establishment of Corrective Action Objectives

The Permittee, in conjunction with IDEM, shall establish site-specific objectives for the corrective action. These objectives shall be based on public health and environmental criteria, information gathered during the RFI, IDEM and EPA guidance, and the requirements of any applicable State or Federal statutes. At a minimum, all corrective actions concerning ground water releases from regulated units must be consistent with, and as stringent as, those required under 329 IAC 3.1-9-1 (40 CFR 264.100).

# C. Screening of Corrective Measure Technologies

The Permittee shall review the results of the RFI and identify any technologies which are applicable at the facility. The Permittee shall screen technologies to eliminate those that may prove infeasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that do not achieve the corrective measure objective within a reasonable time period. This screening process focuses on eliminating those technologies which have severe limitations for a given set of waste and site-specific conditions. The screening step may also eliminate technologies based on inherent technology limitations.

Site, waste, and technology characteristics which are used to screen inapplicable technologies are described in more detail below:

1. Site Characteristics

Site data should be reviewed to identify conditions that may limit or promote the use of certain technologies. Technologies whose use is clearly precluded by site characteristics should be eliminated from further consideration;

2. Waste Characteristics

Identification of waste characteristics that limit the effectiveness or feasibility of technologies is an important part of the screening process. Technologies clearly limited by these waste characteristics should be eliminated from consideration. Waste characteristics particularly affect the feasibility of *in-situ* methods, direct treatment methods, and land disposal (on/off-site); and

3. Technology Limitations

During the screening process, the level of technology development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process. For example, certain treatment methods have been developed to a point

where they can be implemented in the field without extensive technology transfer or development.

D. Identification of the Corrective Measure Alternative or Alternatives

The Permittee shall develop the Corrective Measure Alternative or Alternatives based on the corrective action objective(s). The Permittee shall rely on engineering practice to determine which of the technologies appear most suitable for the site. Technologies can be combined to form the overall corrective action alternative or alternatives. The alternative or alternatives developed should adequately address all site problems and corrective action objectives. Each alternative may consist of an individual technology or a combination of technologies. The Permittee shall document the reasons for excluding technologies.

# Task Seven: Evaluation of the Corrective Measure Alternative or Alternatives

The Permittee shall evaluate the corrective measure alternatives based on technical, environmental, human health and institutional concerns. The Permittee shall also develop cost estimates for each proposed corrective measure alternative.

### A. Technical/Environmental/Human Health/Institutional

The Permittee shall provide a description of each proposed corrective measure alternative which includes, but is not limited to, the following: preliminary process flow sheets; preliminary sizing and type of construction for buildings and structures; and rough quantities of utilities required. The Permittee shall evaluate each alternative in the four following areas:

1. Technical;

The Permittee shall evaluate each corrective measure alternative based on performance, reliability, implementability and safety.

a. The Permittee shall evaluate performance based on the effectiveness and useful life of the corrective measure:

Effectiveness shall be evaluated in terms of the ability to (1)perform intended functions, such as containment, diversion, removal, destruction, or treatment. The effectiveness of each corrective measure shall be determined either through design specifications or by performance evaluation. Any specific waste or site characteristics which could potentially impede effectiveness shall be considered. The evaluation should also consider the effectiveness of combinations of technologies; and Useful life is defined as the length of time the level of effectiveness can be maintained. Most corrective measure technologies, with the exception of destruction, deteriorate with time. Often, deterioration can be slowed through proper system operation and maintenance, but the technology eventually may require replacement. Each corrective measure shall be evaluated in terms of the projected service lives of its component technologies. Resource availability in the future life of the technology, as well as appropriateness of the technology, must be considered in estimating the useful life of the project.

- b. The Permittee shall provide information on the reliability of each corrective measure including their operation and maintenance requirements and their demonstrated reliability:
  - (1) Operation and maintenance requirements include the frequency and complexity of necessary operation and maintenance. Technologies requiring frequent or complex operation and maintenance activities should be regarded as less reliable than technologies requiring little or straightforward operation and maintenance. The availability of labor and materials to meet these requirements shall also be considered; and
  - (2) Demonstrated and expected reliability is a way of measuring the risk and effect of failure. The Permittee should evaluate whether the technologies have been used effectively under analogous conditions; whether the combination of technologies have been used together effectively; whether failure of any one technology has an immediate impact on receptors or the other technologies; and whether the corrective measure has the flexibility to deal with uncontrollable changes at the site.
- c. The Permittee shall describe the implementability of each corrective measure including the relative ease of installation (constructability) and the time required to achieve a given level of response:

- (1) Constructability is determined by conditions both internal and external to the facility conditions and includes such items as location of underground utilities, depth to water table, heterogeneity of subsurface materials, and location of the facility (i.e., remote location vs. a congested urban area). The Permittee shall evaluate what measures can be taken to facilitate construction under these conditions. External factors which affect implementation include the need for special permits or agreements, equipment availability, and the location of suitable off-site treatment or disposal facilities; and
- (2) Time has two components that shall be addressed: the time it takes to implement a corrective measure and the time it takes to actually see beneficial results. Beneficial results are defined as the reduction of contaminants to some acceptable, pre-established level.
- d. The Permittee shall evaluate each corrective measure alternative with regard to safety. This evaluation shall include threats to the safety of nearby communities and environments as well as those to workers during implementation. Factors to consider are fire, explosion, and exposure to hazardous substances.
- 2. Environmental;

The Permittee shall perform an Environmental Assessment for each alternative. The Environmental Assessment shall focus on the facility conditions and pathways of contamination actually addressed by each alternative. The Environmental Assessment for each alternative will include, at a minimum, an evaluation of: the short- and long-term beneficial and adverse effects of the response alternative; any adverse effects on environmentally sensitive areas; and an analysis of measures to mitigate adverse effects.

3. Human Health; and

The Permittee shall assess each alternative in terms of the extent of which it mitigates short- and long-term potential exposure to any residual contamination and protects human health both during and after implementation of the corrective measure. The assessment will describe the levels and characterizations of contaminants on-site, potential exposure routes, and potentially affected population. Each alternative will be evaluated to determine the level of exposure to contaminant and the reduction over time. For management of mitigation measures, the relative reduction of impact will be determined by comparing residual levels of each alternative with existing criteria, standards, or guidelines acceptable to IDEM.

4. Institutional.

The Permittee shall assess relevant institutional needs for each alternative. Specifically, the effects of federal, state, and local environmental and public health standards, regulations, guidance, advisories, ordinances, or community relations on the design, operation, and timing of each alternative.

## B. Cost Estimate

For the purposes of cost comparisons and financial assurance, the Permittee shall develop an estimate of the cost of each corrective measure alternative (and for each phase or segment of the alternative). The cost estimate shall include both capital and operation and maintenance costs.

- 1. Capital costs consist of direct (construction) and indirect (non-construction and overhead) costs.
  - a. Direct capital costs include:
    - (1) Construction costs: Costs of materials, labor (including fringe benefits and worker's compensation), and equipment required to install the corrective measure.
    - (2) Equipment costs: Costs of treatment, containment, disposal and/or service equipment necessary to implement the action; these materials remain until the corrective action is complete;
    - (3) Land and site-development costs: Expenses associated with purchase of land and development of existing property; and
    - (4) Buildings and services costs: Costs of process and non-process buildings, utility connections, purchased services, and disposal costs.
  - b. Indirect capital costs include:
    - (1) Engineering expenses: Costs of administration, design, construction supervision, drafting, and testing of corrective measure alternatives;
    - (2) Legal fees and license or permit costs: Administrative and technical costs necessary to obtain licenses and permits for installation and operation;

- (3) Startup and shakedown costs: Costs incurred during corrective measure startup; and
- (4) Contingency allowances: Funds to cover costs resulting from unforeseen circumstances, such as adverse weather conditions, strikes, and inadequate facility characterization.
- 2. Operation and maintenance costs are post-construction costs necessary to ensure continued effectiveness of a corrective measure. The Permittee shall consider the following operation and maintenance cost components:
  - a. Operating labor costs: Wages, salaries, training, overhead, and fringe benefits associated with the labor needed for post-construction operations;
  - b. Maintenance materials and labor costs: Costs for labor, parts, and other resources required for routine maintenance of facilities and equipment;
  - c. Auxiliary materials and energy: Costs of such items as chemicals and electricity for treatment plant operations, water and sewer service, and fuel;
  - d. Purchased services: Sampling costs, laboratory fees, and professional fees for which the need can be predicted;
  - e. Disposal and treatment costs: Costs of transporting, treating, and disposing of waste materials, such as treatment plant residues, generated during operations;
  - f. Administrative costs: Costs associated with administration of corrective measure operation and maintenance not included under other categories;
  - g. Insurance, taxes, and licensing costs: Costs of such items as liability and sudden accidental insurance; real estate taxes on purchased land or rights-of-way; licensing fees for certain technologies; and permit renewal and reporting costs;
  - h. Maintenance reserve and contingency funds: Annual payments into escrow funds to cover (1) costs of anticipated replacement or rebuilding of equipment and (2) any large unanticipated operation and maintenance costs; and
  - i. Other costs: Items that do not fit any of the above categories.

### Task Eight: Justification and Recommendation of the Corrective Measure or Measures

The Permittee shall justify and recommend a corrective measure alternative using technical, human health, environmental, and cost criteria. This recommendation shall include summary tables which allow the alternative or alternatives to be understood easily. Tradeoffs among health risks, environmental effects, and other pertinent factors shall be highlighted. IDEM will select the corrective measure alternative or alternatives to be implemented based on the results of Tasks Seven and Eight. At a minimum, the following criteria will be used to justify the final corrective measure or measures.

- A. <u>Technical</u>
  - 1. Performance corrective measure or measures which are most effective at performing their intended functions and maintaining the performance over extended periods of time will be given preference;
  - 2. Reliability corrective measure or measures which do not require frequent or complex operation and maintenance activities and that have proven effective under waste and facility conditions similar to those anticipated will be given preference;
  - 3. Implementability corrective measure or measures which can be constructed and operated to reduce levels of contamination to attain or exceed applicable standards in the shortest period of time will be preferred; and
  - 4. Safety corrective measure or measures which pose the least threat to the safety of nearby residents and environments as well as workers during implementation will be preferred.

### B. <u>Human Health</u>

The corrective measure or measures must comply with existing IDEM and U.S. EPA criteria, standards, or guidelines for the protection of human health. Corrective measures which provide the minimum level of exposure to contaminants and the maximum reduction in exposure with time are preferred.

C. <u>Environmental</u>

The corrective measure or measures posing the least adverse impact (or greatest improvement) over the shortest period of time on the environment will be favored.

D. <u>Cost</u>

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If multiple corrective measures are found to be technically adequate and sufficiently protective of human health and the environment, the corrective measure(s) which cost(s) the least will be selected.

## Task Nine: Submittals

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The Permittee shall prepare a Corrective Measure Study Report presenting the results of Task Six through Task Eight and recommending a corrective measure alternative.

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### A. <u>Progress Reports</u>

The Permittee shall, at a minimum, provide IDEM with signed, quarterly progress reports containing:

- 1. A description and estimate of the percentage of the CMS completed;
- 2. Summaries of <u>all</u> findings;
- 3. Summaries of <u>all</u> changes made in the CMS during the reporting period;
- 4. Summaries of <u>all</u> contacts with representatives of the local community, public interest groups or State government during the reporting period;
- 5. Summaries of <u>all</u> problems or potential problems encountered during the reporting period;
- 6. Actions being taken to rectify problems;
- 7. Changes in personnel during reporting periods;
- 8. Projected work for the next reporting period; and
- 9. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

### B. <u>CMS Report</u>

The report shall at a minimum include:

1. A description of the facility;

- a. Site topographic map; and
- b. Preliminary layouts.
- 2. A summary of the corrective measure or measures;
  - a. Description of the corrective measure or measures and rationale for selection;
  - b. Performance expectations;
  - c. Preliminary design criteria and rationale;
  - d. General operation and maintenance requirements; and
  - e. Long-term monitoring requirements.
- 3. A summary of the RFI and impact on the selected corrective measure or measures;
  - a. Field studies (ground water, surface water, soil, air); and
  - b. Laboratory studies (bench scale, pick scale).
- 4. Design and implementation precautions;
  - a. Special technical problems;
  - b. Additional engineering data required;
  - c. Permits and regulatory requirements;
  - d. Access, easements, right-of-way;
  - e. Health and safety requirements; and
  - f. Community relations activities.
- 5. Cost estimates and schedules;
- a. Capital cost estimate;
- b. Operation and maintenance cost estimate; and
- c. Project schedule (design, construction, operation).

The Permittee shall provide IDEM with the report, which is subject to IDEM approval or modification and approval.

#### **CORRECTIVE MEASURE IMPLEMENTATION (CMI)**

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The purpose of the Corrective Measure Implementation Program Plan is to ensure the Permittee designs, constructs, operates, maintains, and monitors the performance of the corrective measure or measures selected to protect human health and the environment. The Permittee will furnish all personnel, materials and services necessary for the implementation of the corrective measure or measures.

The CMI program consists of four tasks:

- <u>Task Ten</u>: Corrective Measure Implementation Program Plan
  - A. Program Management Plan
  - B. Community Relations Plan

<u>Task Eleven</u>: Corrective Measure Design

- A. Design Plans and Specifications
- B. Operation and Maintenance Plan
- C. Cost Estimate
- D. Project Schedule
- E. Construction Quality Assurance Objectives
- F. Health and Safety Plan
- G. Design Phases

#### Task Twelve: Corrective Measure Construction

- A. Responsibility and Authority
- B. Construction Quality Assurance Personnel Qualifications
- C. Inspection Activities
- D. Sampling Requirements
- E. Documentation

F. Financial Assurance

Task Thirteen: Submittals

- A. Progress Reports
- B. CMI Reports

#### Task Ten: Corrective Measure Implementation Program Plan

The Permittee shall prepare for submission to IDEM, a CMI Program Plan. This program will include the development and implementation of several plans, which require concurrent preparation. It may be necessary to revise plans as the work is performed to focus efforts on a particular problem. The Program Plan includes the following:

#### A. Program Management Plan

The Permittee shall prepare a Program Management Plan which will document the overall management strategy for performing the design, construction, operation, maintenance and monitoring of corrective measure(s). The plan shall document the responsibility and authority of all organizations and key personnel involved with the implementation. The Program Management Plan will also include a description of qualifications of key personnel directing the CMI, including contractor personnel.

#### B. Community Relations Plan

The Permittee shall revise the Community Relations Plan to include any changes in the level of concern of information needs to the community during design and construction activities.

- 1. Specific activities which must be conducted during the design stage are the following:
  - a. Revise the facility Community Relations Plan to reflect knowledge of citizen concerns and involvement at this stage of the process; and
  - b. Prepare and distribute a public notice and an updated fact sheet at the completion of engineering design.

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2. Specific activities to be conducted during the construction stage could range from group meetings to fact sheets on the technical status, depending on citizen interest.

#### Task Eleven: Corrective Measure Design

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The Permittee shall prepare a final construction plan and specifications to implement the corrective measure(s) at the facility as defined in the Corrective Measure Study.

A. Design Plans and Specifications

The Permittee shall develop clear and comprehensive design plans and specifications which include but are not limited to the following:

- 1. Discussion of the design strategy and the design basis, including;
  - a. Compliance with all applicable or relevant environmental and public health standards; and
  - b. Minimization of environmental and public impacts.
- 2. Discussion of the technical factors of importance including;
  - a. Use of currently accepted environmental control measures and technology;
  - b. The constructability of the design; and
  - c. Use of currently acceptable construction practices and techniques.
- 3. Description of assumptions made and detailed justification of these assumptions;
- 4. Discussion of the possible sources of error and references to possible operation and maintenance problems;
- 5. Detailed drawings of the proposed design including;
  - a. Qualitative flow sheets; and
  - b. Quantitative flow sheets.

- 6. Tables listing equipment and specifications;
- 7. Tables giving material and energy balances;
- 8. Appendices including;
  - a. Sample calculations (one example presented and explained clearly for significant or unique design calculations);
  - b. Derivation of equations essential to understanding the report; and
  - c. Results of laboratory or field tests.
- B. Operation and Maintenance Plan

The Permittee shall prepare an Operation and Maintenance Plan to cover both implementation and long-term maintenance of the corrective measure. The plan shall be composed of the following elements:

- 1. Description of normal operation and maintenance (O&M);
  - a. Description of tasks for operations;
  - b. Description of tasks for maintenance;
  - c. Description of prescribed treatment or operation conditions; and
  - d. Schedule showing frequency of each O&M task.
- 2. Description of potential operating problems;
  - a. Description and analysis of potential operation problems;
  - b. Sources of information regarding problems; and
  - c. Common and/or anticipated remedies.
- 3. Description of routine monitoring and laboratory testing;
  - a. Description of monitoring tasks;

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- b. Description of required laboratory tests and their interpretation;
- c. Required QA/QC; and
- d. Schedule of monitoring frequency and date, if appropriate, when monitoring may cease.
- 4. Description of alternate O&M;

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- a. Should systems fail, alternate procedures to prevent undue hazard; and
- b. Analysis of vulnerability and additional resource requirements should a failure occur.
- 5. Safety Plan;

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- a. Description of precautions, of necessary equipment, etc., for site personnel; and
- b. Safety tasks required in event of systems failure.
- 6. Description of equipment; and
  - a. Equipment identification;
  - b. Installation of monitoring components;
  - c. Maintenance of site equipment; and
  - d. Replacement schedule for equipment and installed components.
- 7. Records and reporting mechanisms required.
  - a. Daily operating logs;
  - b. Laboratory records;
  - c. Records for operating costs;
  - d. Mechanism for reporting emergencies;

- e. Personnel and maintenance records; and
- f. Monthly/annual reports to state agencies.

An initial Draft Operation and Maintenance Plan shall be submitted simultaneously with the Prefinal Design Document Submission and the Final Operation and Maintenance Plan with the Final Design Documents.

C. <u>Cost Estimate</u>

The Permittee shall develop cost estimates for the purpose of assuring that the facility has the financial resources necessary to construct and implement the corrective measure. The cost estimate developed in the Corrective Measure Study shall be refined to reflect the more detailed/accurate design plans and specifications being developed. The cost estimate shall include both capital and O&M costs. An initial Cost Estimate shall be submitted simultaneously with the Prefinal Design submission and the Final Cost Estimate with the Final Design Document.

#### D. Project Schedule

The Permittee shall develop a Project Schedule for construction and implementation of the corrective measure or measures which identifies timing for initiation and completion of all critical path tasks. The Permittee shall specifically identify dates for completion of the project and major interim milestones. An initial Project Schedule shall be submitted simultaneously with the Prefinal Design Document submission and the Final Project Schedule with the Final Design Document.

E Construction Quality Assurance Objectives

The Permittee shall identify and document the objectives and framework for the development of a construction quality assurance program including, but not limited to the following: responsibility and authority; personnel qualifications; inspection activities; sampling requirements; and documentation.

#### F. Health and Safety Plan

The Permittee shall modify the Health and Safety Plan developed for the RFI to address the activities to be performed at the facility to implement the corrective measure(s).

G. Design Phases

The design of the corrective measure(s) should include the phases outlined below.

#### 1. Preliminary design

The Permittee shall submit the Preliminary design when the design effort is approximately 30% complete. At this stage, the Permittee shall have fieldverified the existing conditions of the facility. The preliminary design shall reflect a level of effort such that the technical requirements of the project have been addressed and outlined so that they may be reviewed to determine if the final design will provide an operable and usable corrective measure. Supporting data and documentation shall be provided with the design documents defining the functional aspects of the program. The preliminary construction drawings by the Permittee shall reflect organization and clarity. The scope of the technical specifications shall be outlined in a manner reflecting the final specifications. The Permittee shall include with the preliminary submission design calculations reflecting the same percentage of completion as the designs they support.

2. Intermediate design

Complex project designs may necessitate review of the design documents between the preliminary and the prefinal/final design. At the discretion of IDEM, a design review may be required at 60% completion of the project. The intermediate design submittal should include the same elements as the prefinal design.

3. Correlating plans and specifications

General correlation between drawings and technical specifications, is a basic requirement of any set of working construction plans and specifications. Before submitting the project specifications, the Permittee shall:

- a. Coordinate and cross-check the specifications and drawings; and
- b. Complete the proofing of the edited specifications and required cross-checking of all drawings and specifications.

These activities shall be completed prior to the 95% prefinal submittal to IDEM.

4. Equipment start-up and operator training

The Permittee shall prepare, and include in the technical specifications governing treatment systems, contractor requirements for providing: appropriate service visits by experienced personnel to supervise the installation, adjustment, startup and operation of the treatment systems, and training covering appropriate operational procedures once the startup has been successfully accomplished.

5. Additional studies

The CMI may require additional studies to supplement the available technical data. At the direction of IDEM for any such studies required, the Permittee shall furnish all services, including field work as required, materials, supplies, plant, labor, equipment, investigations, studies and superintendence. Sufficient sampling, testing and analysis shall be performed to optimize the required treatment and/or disposal operations and systems. There shall be an initial meeting of all principal personnel involved in the development of the program. The purpose will be to discuss objectives, resources, communication channels, role of personnel involved and orientation of the site, etc. The interim report shall present the results of the testing with the recommended treatment or disposal system (including options). A review conference shall be scheduled after the interim report has been reviewed by all interested parties. The final report of the testing shall include all data taken during the testing and a summary of the results of the studies.

6. Prefinal and final design

The Permittee shall submit to IDEM the prefinal/final design documents in two parts. The first submission shall be at 95% completion of design (i.e., prefinal). After approval of the prefinal submission, the Permittee shall execute the required revisions provided by IDEM and submit the final documents 100% complete with reproducible drawings and specifications.

The prefinal design submittal shall consist of the Design Plans and Specifications, Operation and Maintenance Plan, Capital and Operating and Maintenance Cost Estimate, Project Schedule, Quality Assurance Plan and Specifications for the Health and Safety Plan.

The final design submittal shall consist of the Final Design Plans and Specifications (100% complete), the Permittee's Final Construction Cost Estimate, the Final Operation and Maintenance Plan, Final Quality Assurance Plan, Final Project Schedule and Final Health and Safety Plan specifications. The quality of the design documents should be such that the Permittee would be able to include them in a bid package and invite contractors to submit bids for the construction project.

#### Task Twelve: Corrective Measure Construction

Following IDEM approval of the final design, the Permittee shall develop and implement a Construction Quality Assurance (CQA) Program to ensure, with a reasonable degree of certainty, that a completed corrective measure meets or exceeds all design criteria, plans and specifications. The CQA plan is a facility-specific document that must be submitted to IDEM for approval prior to the start of construction. At a minimum, the CQA plan should include the elements that are summarized below. Upon IDEM approval of the CQA plan, the Permittee shall construct and implement the corrective measure in accordance with the approved design, schedule and the CQA plan. The Permittee shall also implement the elements of the approved Operation and Maintenance plan.

#### A. <u>Responsibility and Authority</u>

The responsibility and authority of all organizations (i.e., technical consultants, construction firms, etc.) and key personnel involved in the construction of the corrective measure shall be described fully in the CQA plan. The Permittee must identify a CQA officer and the necessary supporting inspection staff.

#### B. Construction Quality Assurance Personnel Qualifications

The qualifications of the CQA officer and supporting inspection personnel shall be presented in the CQA plan to demonstrate that they possess the training and experience necessary to fulfill their identified responsibilities.

#### C. Inspection Activities

The observations and tests that will be used to monitor the construction and/or installation of the components of the corrective measure shall be summarized in the CQA plan. The plan shall include the scope and frequency of each type of inspection. Inspections shall verify compliance with all environmental requirements and include, but not be limited to, air quality and emissions monitoring records, waste disposal records (e.g., RCRA transportation manifests), etc. The inspection should also ensure compliance with all health and safety procedures. In addition to oversight inspections, the Permittee shall conduct the following activities:

1. Preconstruction inspection and meeting

The Permittee shall conduct a preconstruction inspection and meeting to:

- a. Review methods for documenting and reporting inspection data;
- b. Review methods for distributing and storing documents and reports;
- c. Review work area security and safety protocol;
- d. Discuss any appropriate modifications of the CQA plan to ensure that site-specific considerations are addressed; and
- e. Conduct a site walk-around to verify that the design criteria, plans, and specifications are understood and to review material and equipment storage locations.

The preconstruction inspection and meeting shall be documented by a designated person and minutes should be transmitted to all parties.

2. Prefinal inspection

Upon preliminary project completion, the Permittee shall notify IDEM for the purposes of conducting a prefinal inspection. The prefinal inspection will consist of a walk-through inspection of the entire project site. The inspection is to determine whether the project is complete and consistent with the contract documents and the IDEM-approved corrective measure. Any outstanding construction items discovered during the inspection will be identified and noted. Additionally, treatment equipment will be operationally tested by the Permittee. The Permittee will certify that the equipment has performed to meet the purpose and intent of the specifications. Retesting will be completed where deficiencies are revealed. The prefinal inspection report must outline the outstanding construction items, actions required to resolve items, completion date for these items, and date for final inspection.

3. Final inspection

Upon completion of any outstanding construction items, the Permittee shall notify IDEM for the purposes of conducting a final inspection. The final inspection will consist of a walk-through inspection of the project site. The prefinal inspection report will be used as a checklist with the final inspection focusing on the outstanding construction items identified in the prefinal inspection. Confirmation shall be made that outstanding items have been resolved.

#### D. Sampling Requirements

The sampling activities, sample size, sample locations, frequency of testing, acceptance and rejection criteria, and plans for correcting problems as addressed in the project specifications shall be presented in the CQA plan.

#### E. Documentation

Reporting requirements for CQA activities shall be described in detail in the CQA plan. This should include such items as daily summary reports, inspection data sheets, problem identification and corrective measures reports, design acceptance reports, and final documentation. Provisions for the final storage of all records also should be presented in the CQA plan.

#### F. Financial Assurance

The implementation of a corrective measure requires a permit modification. The permit and schedule of compliance will be modified to require a demonstration of financial assurance for corrective action within 120 days of the effective date of the permit modification. The demonstration of financial assurance shall be in accordance with 329 IAC 3.1-15-4 and 329 IAC 3.1-15-6, if applicable (40 CFR 264.143 and 40 CFR 264.145, respectively).

#### Task Thirteen: Submittals

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The Permittee shall prepare plans, specifications, and reports as set forth in Task Ten through Task Twelve to document the design, construction, operation, maintenance, and monitoring of the corrective measure. The documentation shall include, but not be limited to the following:

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#### A. <u>Progress Reports</u>

The Permittee shall provide IDEM with signed progress reports, in accordance with the permit's Corrective Action Compliance Schedule, during the design and construction phases and during operation and maintenance activities that contain, at a minimum:

- 1. A description and estimate of the percentage of the CMI completed;
- 2. Summaries of <u>all</u> findings;
- 3. Summaries of <u>all</u> changes made in the CMI during the reporting period;
- 4. Summaries of <u>all</u> contacts with representatives of the local community, public interest groups or State government during the reporting period;
- 5. Summaries of <u>all</u> problems or potential problems encountered during the reporting period;
- 6. Actions being taken to rectify problems;
- 7. Changes in personnel during the reporting period;
- 8. Projected work for the next reporting period; and
- 9. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

#### B. <u>CMI REPORTS</u>

1. The Permittee shall submit a CMI Program Plan, as outlined in Task Ten;

- 2. The Permittee shall submit Construction Plans and Specifications, Design Reports, Cost Estimates, Financial Assurance, Project Schedules, Operation and Maintenance plans, and Study Reports as outlined in Task Eleven;
- 3. The Permittee shall submit a CQA Program Plan and Documentation as outlined in Task Twelve; and
- 4. At the "completion" of the construction of the project, the Permittee shall submit a CMI Report to IDEM. The Report shall document that the project is consistent with the design specifications, and that the corrective measure is performing adequately. The Report shall include, but not be limited to the following elements:
  - a. Synopsis of the corrective measure and certification of the design and construction;
  - b. Explanation of any modifications to the plans and why these were necessary for the project;
  - c. Listing of the criteria, established before the corrective measure was initiated, for judging the functioning of the corrective measure and also explaining any modification to these criteria;
  - d. Results of facility monitoring, indicating that the corrective measure will meet or exceed the performance criteria; and
  - e. Explanation of the operation and maintenance (including monitoring) to be undertaken at the facility.

This report should include all of the daily inspection summary reports, inspection summary reports, inspection data sheets, problem identification and corrective measure reports, block evaluation reports, photographic reporting data sheets, design engineers' acceptance reports, deviations from design and material specifications (with justifying documentation) and as-built drawings.

All of these reports are subject to IDEM approval.

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# **ATTACHMENT II**

SUPER PULL APART MACHINE

**Revised August 2018** 

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### ATTACHMENT II: SPAM

#### A. PART A APPLICATION

The Part A application precedes the introduction of the entire application. There is no separate Part A application for the individual units at CRANE.

#### **B. FACILITY DESCRIPTION**

#### **B-1** General Description

The Ammunition Peculiar Equipment 2271, Super Pull-Apart Machine (SPAM) is a two phase demilitarization process. The first phase involves disassembling munition items by separating the projectiles from the cartridge case. The propellant is removed from the cartridge, transferred into labeled storage containers, and transported to the Ammunition Burning Ground (ABG) for treatment. The second phase (treatment) involves the functioning of the active primer via a primer firing system. The SPAM disassembly line is configured to process 50 caliber, 20mm, 25mm, 30 mm and 40mm cartridges. The SPAM process is located in Building 146 - Bay 5, in the central portion of CRANE, see **Exhibit B-1**, CRANE Installation Site Map.

#### **B-2** Topographic Map/General Requirements

Requirements	Location
Topographic Map	Exhibit B-6
Legal Boundaries	Exhibit B-1
Access Control	Exhibit B-7
Surface Waters Including Intermittent Streams	Exhibit B-6
Surrounding Land Use	Exhibit B-6
CRANE Wind Rose Data	Exhibit B-11
CRANE 100-year Floodplain Map	Exhibit B-10
CRANE Watershed Map	Exhibit V.B-12
Injection/Withdrawal Wells	Not Applicable
Building, Structures within 1,000 ft.	Exhibit B-7
Site Features, Buildings, Utilities, Fencing, GW Wells	Exhibit B-7
Loading and Unloading Areas	Exhibit B-7

Barriers fo	r Drainage or Flood Control	Not Applicable
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## Operational Units in HWM Facility Locations Not Applicable

**Exhibit B-6** depicts a topographic contour map showing surface waters including intermittent streams, building and structures, and Hazardous Waste Management (HWM) facility locations within 1,000 feet of the SPAM Unit, at a scale of 1 inch = 300 feet and contour intervals of five feet.

The surrounding land usage within 1,000 feet of the SPAM Unit is completely contained within the CRANE installation.

The SPAM Unit is located within building 146 which is completely surrounded by a security fence. In addition, the CRANE installation is completely encompassed by a guarded security fence. No additional access control and fencing are necessary.

**Exhibit B-7** depicts a site feature map at a scale of 1 inch = 150 feet. The map shows the building 146 and bay 5 where the SPAM unit will be located, utilities, road ways, security fencing, access control, incoming waste storage area, and ground water monitoring wells (for SWMU 16).

#### **B-3** Location Information (Seismic/Floodplain)

**Exhibit B-10** depicts the 100 year floodplain boundaries for the CRANE Installation that was taken from Flood Insurance Maps published by the Federal Emergency Management Agency (FEMA). The SPAM unit is not located in a 100-year floodplain, therefore the requirement of 40 CFR §264.18(a) does not apply to the SPAM Unit. **Exhibit v.B-12** shows the watersheds for NSA CRANE. Surface drainage from the SPAM unit flows in a southwesterly direction into unnamed tributaries of the Turkey Creek Watershed Basin.

#### **B-4** Traffic Information

General traffic information related to movement of hazardous materials at CRANE is presented in Attachment O, Introduction, Section B-4.

Munitions scheduled for treatment at the SPAM will be transported from storage magazines. All transportation of munitions/waste will be in accordance with traffic information provided in Attachment O, Section B-4. Upon delivery, the munition items will be placed in onsite temporary storage awaiting processing through the SPAM unit. Waste generated from the treatment process will consist of propellant that will be transported to the Ammunition Burning Ground for disposal. Projectiles and functioned cartridges are comprised of metal and will be recycled at an off-site facility.

#### C. WASTE CHARACTERISTICS

Hazardous wastes are generated at CRANE as a result of production, demilitarization, research and development, and associated functions.

All wastes managed/treated in the SPAM possess the hazardous characteristic of reactivity (D003) because of the reactive properties of energetics contained in the wastes. **Table V.C-1a** provides a list of potential waste munitions (primers) and components that could be treated by the SPAM. Propellants, explosives, and pyrotechnics (PEP) are designed, formulated and manufactured to be an explosively reactive material. Although there is a varying degree of reactivity within the broad range of PEP used in ordnance, its primary purpose is to react; therefore, it is reactive by design. Some PEP might be classified as a hazardous waste for reasons over and above the reactivity characteristic, but the primary concern for

treatment is to eliminate the acute safety hazard inherent with PEP material.

## C-1 Chemical and Physical Analyses

All sampling and analysis procedures are general in nature and thus apply to all operations at the installation. Accordingly, these procedures are provided in Attachment O – Introduction, Section C. Only those requirements specific to the SPAM operation are provided here. The SPAM unit has not been constructed, therefore, the procedures outlined below are proposed and subject to change.

## C-2 Waste Analysis Plan

Waste analyses, in general, follow the procedures described in detail in Attachment O - Introduction, Section C-2. Specific information about waste military munitions and explosives, propellants, and pyrotechnic components is described in Attachment V, Section C. Area-specific aspects of the waste analysis plan for the SPAM are provided in the following paragraphs.

## C-2a(1) Parameters - Wastes Treated

Process knowledge is utilized to obtain information on the physical and chemical characteristics of wastes treated in the SPAM Unit. Sampling and analysis of well-documented ordnance and PEP material is not proposed and is not proposed for the following reasons:

- The composition of military ordnance is well described by military specifications, and the reactive properties are well known. The military specifications essentially constitute the waste specification.
- Sampling of military ordnance items presents an acute safety hazard and is not proposed to obtain the necessary physical and chemical information to safely treat ordnance items.
- Off-specification or obsolete military ordnance items and explosives are also incinerated, but differ little from that of the accepted product due to the inherent quality control standards required during production. Incineration of off-specification or obsolete items results in hazards that are substantially indistinguishable from that of the military ordnance items and components that do meet DOD specifications. Therefore, additional data is not required for treatment of off-specification or obsolete military ordnance, components, and explosives.

### C-2a(2) Parameters - Treatment Residuals

The SPAM unit is a demilitarization process, whereby, waste military munitions are processed using a two phase approach. Items are first subjected to a dismantling process. This phase generates scrap metal (munition casings/projectiles) and propellant. The projectiles will be processed for recycling and the extracted propellant will be properly containerized, stored, and transferred to the ABG for onsite treatment. The second phase of the operation (treatment) is the functioning of the munition primer within the cartridge casing. After the primer component has been functioned, the expended cartridge cases will be inspected for residual propellant and managed accordingly. Section D-8 provides more detailed information regarding waste management.

The treatment phase of the SPAM operation is designed to capture residuals generated during the primer functioning. These residuals are comprised of ash material and are captured through the Air Pollution Control System (APCS). This waste is deposited into 55-gallon drums connected to the APCS. When sufficient waste has accumulated, samples will be collected and submitted for waste characterization analysis. <u>Table C-4</u> lists the parameters to be analyzed and a supportive rationale.

## C-2b(1) Test Methods - Wastes Treated

Based on the detailed information known regarding the munitions being treated, "process knowledge" is the criteria that will be utilized to determine the physical and chemical characteristics of munitions treated in the SPAM Unit, therefore, testing procedures are not applicable.

## C-2b(2) Test Methods - Treatment Residues

As presented in Section C-2a(2), the SPAM treatment residues are comprised of two types. The process waste is primarily metal (brass) that will be recycled and propellant that will be transported to the ABG treatment facility. The ash waste captured by the APCS will be sampled and analyzed to determine the waste characterization. <u>Table C-4</u> lists the analytical methods for the anticipated constituents and a rationale for analysis. All methods referenced are from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846," latest revision. The laboratory performing these analyses is to operate in accordance with a QA/QC plan that is equivalent to the one detailed in Chapter 1 of SW-846.

## C-2d(1) Frequency of Analyses - Wastes Treated

As noted above in Section C-2(a), "process knowledge" will be utilized to characterize all SPAM unit waste streams prior to treatment. If there is a substantial change in operation and/or material treated additional waste characterization assessments will be performed, as required.

## C-2d(2) Frequency of Analyses - Treatment Residues

Waste material generated from primer treatment consist of ash residues collected through the APCS. The frequency of analysis for these residues will depend on the types of waste feed streams and the rate at which residue containers are filled. Initially, a sample of this waste will be collected and submitted for laboratory analysis as described above in section C-2a(2) to determine the waste characterization to determine the proper method of disposal. Additional samples will be collected only when there is change in feed composition that could potentially result in changes in the hazard characteristics.

## C-2e Additional Requirements for Waste Generated Off-Site

The SPAM unit has the capability to perform demilitarization of waste military ordnance/explosives from off-site sources. This information is covered in Attachment O - Introduction, Section C-2e.

## C-2f Additional Requirements for Ignitable, Reactive, or Incompatible Wastes

There are no additional waste characterization requirements for wastes treated in the SPAM that must be addressed for ignitable, reactive, or incompatible wastes. All of the proposed waste military ordnance/explosives treatment in the SPAM Unit are reactive or ignitable. The reactivity and ignitability characteristics are the primary characteristics of concern regarding treatment. Therefore, all waste characterization procedures have been developed considering the reactivity, ignitability, and potential incompatibilities of the waste munitions/explosives that are treated in the SPAM Unit.

## C-3 Waste Analysis Requirements Pertaining to Land Disposal Restrictions

All hazardous wastes including treatment residues must meet land disposal restriction (LDR) standard prior to land disposal. Treatment standards for hazardous wastes are contained in 40 CFR 268.40.

The waste analysis plan (Attachment O, Introduction, and Section C-2) provides information necessary to determine whether wastes treated in the SPAM Unit and treatment residues are being managed properly under LDR requirements.

## C-3a(1) Spent Solvent and Dioxin Wastes

Not applicable to SPAM Unit operations.

C-3a(2) California List Wastes Not applicable to SPAM Unit operations.

## C-3a(3)(4) Listed and Characteristic Wastes

The primary hazard characteristic associated with the waste military munitions/explosives treated in the SPAM Unit is reactivity (D003) due to the presence of energetic materials. Some of these wastes may also be classified as toxicity characteristic wastes, due to the presence of metals (D004 through D0011), 2,4-dinitrotoluene (D030), and hexachlorobenzene (D032). The land disposal restriction (LDR) treatment standard for D003 wastes [explosives subcategory based on 40 CFR §§261.23(a)(6), (7), and (8)] is deactivation and meet 40 CFR 268.48 standards for underlying hazardous constituents.

Treatment in the SPAM Unit deactivates the reactivity characteristic. Therefore, treatment residues (metal, shell casings and propellant) are not reactive and meet the LDR treatment standard. Metal scrap generated is inspected to verify that is free of explosives then submitted for recycling, and is therefore not subject to LDR treatment standards. However, ash dust captured through the APCS may contain underlying hazardous constituents. No hazardous SPAM Unit treatment residuals are disposed onsite at CRANE. All hazardous SPAM Unit APCS dusts are shipped to off-site treatment, storage, and disposal facilities.

## C-3a(5) Radioactive Mixed Waste

CRANE does not manage radioactive mixed wastes. Therefore, this section is not applicable.

### C-3a(6) Leachates

Leachates are not land disposed at this site. Therefore, this section is not applicable.

#### C-3a(7) Lab Packs

Lab packs are not land disposed at this site. Therefore, this section is not applicable.

#### C-3a(8) Contaminated Debris

Contaminated debris is not land disposed at this site. Therefore, this section is not applicable.

#### C-3a(9) Waste Mixtures and Waste with Overlapping Requirements

This section is not applicable to SPAM operations.

#### C-3a(10) Dilution and Aggregation of Wastes

This section is not applicable to CRANE operations.

### C-3b Notification, Certification, and Recordkeeping Requirements

### C-3b(1) Retention of Generator Notices and Certification

CRANE may receive wastes that do not meet LDR treatment standards from off-site facilities for treatment at the CRANE treatment facilities. Copies of generator notifications required under 40 CFR §268.7(a) will be retained in the files.

### C-3b(2) Notification and Treatment Requirements for Treatment Facilities

Hazardous waste residues from the treatment of waste military munitions/explosives at the CRANE treatment facilities that meet LDR requirements may be sent to off-site land disposal facilities. Hazardous waste residues that do not meet LDR requirements may be sent to off-site storage or treatment facilities to be further managed. Records of notices provided to off-site storage, treatment and land disposal facilities will be maintained in CRANE records.

### C-3b(3) Notification and Certification Requirements for Land Disposal Facilities

CRANE does not manage hazardous wastes in onsite land disposal facilities. Therefore, this section is not applicable.

### C-3b(4) Wastes Shipped to Subtitle C Facilities

Hazardous waste residues that do not meet LDR requirements may be sent to off-site Subtitle C storage or treatment facilities to be further managed. Records of notices provided to off-site storage, treatment and land disposal facilities will be maintained in CRANE records.

## C-3b(5) Wastes Shipped to Subtitle D Facilities

CRANE treatment residues that are not hazardous may be sent to off-site Subtitle D facilities for further management. Records of notification to IDEM and certification that the waste residue is not hazardous will be placed into the CRANE files. Information specified in 40 CFR 268.9(d) will be supplied.

## C-3b(6) Recyclable Materials

CRANE does not use recyclable materials in a manner constituting disposal. Therefore, this section is not applicable.

## C-3b(7) Recordkeeping

CRANE maintains records of all treatment, storage, and/or disposal facilities that manage wastes generated onsite, make determinations if the waste is restricted from land disposal and keep documentation of that determination and maintain documentation to indicate where, if any restricted wastes were treated, stored, and/or disposed.

### **D. PROCESS INFORMATION**

The Ammunition Peculiar Equipment 2271, Super Pull-Apart Machine (SPAM) is a two phase demilitarization process. The first phase involves disassembling munition items by separating the projectiles from the cartridge case. The propellant is removed from the cartridge and placed in containers and transported to the Ammunition Burning Ground for disposal. The second phase (treatment) involves the functioning of the active primer via a primer firing system. The SPAM disassembly line is configured to process 50 caliber, 20mm, 25mm, 30 mm and 40mm cartridges. For a more detailed description of the process see Section D-8.

### **D-1** Containers

Waste military munitions/explosives that are received at the SPAM operation may arrive in various containers and will remain stored in those containers until they are processed. Incoming items for treatment at the SPAM will be managed at Building 146 as a less than 90-day storage area. If waste is not treated within the 90-day timeframe, it will be removed and transported to a conditionally exempt CE magazine.

Waste military munitions to be treated at CRANE's SPAM unit are contained in cardboard boxes and drums; wooden crates; metal drums, cans, and containers; lined plastic cans and containers; cloth containers; shell; projectile; and component bodies that are Performance Oriented Packaging as regulated under the Department of Transportation (DOT). Waste Military Munitions are never placed in containers which previously held incompatible wastes. Waste military munitions are typically placed in containers that previously held military munitions. All labels are required to have the following information:

- <u>Waste</u> Description– Describes the material;
- Serial & Profile Number;
- <u>Contact</u> the building Supervisor; and
- <u>Date</u> Date the container is full and ready for disposal.

## D-2 Tank Systems

This section does not apply to the SPAM operations.

## D-3 Waste Piles

This section does not apply to the SPAM operations.

## **D-4** Surface Impoundments

This section does not apply to the SPAM operations.

## **D-5** Incinerators

This section does not apply to the SPAM Unit operations.

## D-6 Landfills

This section does not apply to the SPAM Unit operations.

## D-7 Land Treatment

This section does not apply to the SPAM Unit operations.

## D-8 Miscellaneous Units

The Ammunition Peculiar Equipment 2271, Super Pull-Apart Machine (SPAM) is a two phase automated demilitarization process that is designed for breaking down munition items and functioning primers. The SPAM disassembly line is configured to process 50 caliber, 20mm, 25mm, 30 mm and 40mm cartridges. This automated system is capable of demilitarizing live munitions by safely separating projectiles from cartridge casings into more manageable units. The objective of this treatment unit is to provide a fully automated system that enhances operator safety and increase process throughput and capacity, while providing an effective, economical and efficient decommissioning process for multi-caliber munitions to help reduce the US stockpile of unserviceable ammunition. The SPAM unit is approximately 6 feet wide by 37 feet long and is located in Bay 5 of building 146. **Exhibits B-6 & B-6A** present the B-146 facility and surrounding site features.

## D-8a(1) SPAM Process Description

The SPAM unit is comprised of an automated system whereby munitions are loaded onto an ancillary feed conveyor that transports the munition to a continuous motion pull-apart turret that separates the projectiles from the cartridge case. The cartridge cases continue through the system to a dump cubicle where they are inverted and the propellant is transferred, under vacuum, into waste drums. These drums are labeled and transferred to the ABG treatment facility. Removed projectiles will be visually inspected for residual explosive material and if certified "safe" will be containerized, properly labeled, and stored as future product or if determined to be non-usable they will be recycled. Projectiles identified with explosive residual will be containerized, labeled, and transferred to the appropriate permitted treatment unit. If projectiles contain high explosive (HE), they will be sent to the CRANE Demolition Range for treatment. HE rounds are not permitted for treatment at the ABG or Ammunition Peculiar Equipment (APE) 1236 incinerator.

The treatment phase of this system involves processing of the cartridge cases that contain primers. These units move via the conveyor system to the primer firing module where the primer is functioned. The processing rate is controlled by a variable-speed drive, with the maximum rate being approximately one (1) projectile every two (2) seconds. The primer firing module is equipped with an acoustical detector (IMI Model 608A11 accelerometer with IMI Model 682A02 ICP Sensor Signal Conditioner ) to confirm primer was functioned and also has the capability of separating out non-functioning primers. The sensor and signal conditioner produces a signal of acceleration in millivolts (mV)/g (acceleration force on the

sensor at the time of primer detonation). This produces a wave form from the 4-20mA signal conditioner. The programmable logic controller (PLC) has a limit threshold it is looking for in percentage (%) of this 4-20mA output. This limit will be set during the initial low-rate initial production (LRIP). The microphone of the acoustical detector shall be replaced monthly when in use. Records shall be maintained of any replacements, calibrations, or maintenance performed. The accelerometer of the acoustical detection of primer initiations. Records shall be tested prior to the start-up of each shift to ensure proper detection of primer initiations. Records shall be maintained of any replacements, calibrations, testing, or maintenance performed. The hours of operation and the amount of waste fed to the primer firing module shall be monitored and recorded on a daily basis.

Upon passing through the primer firing module, the cartridge cases pass through a vision station that will also identify whether or not the primer has functioned. The vision station is set up to look for the shape/presence of the primer. This will be done by running a dummy test cartridge case through the system that represents a non-fire primer and a fire primer to ensure the cartridge passes or is rejected properly. At a minimum, the vision station will be checked prior to the start-up of each shift. Maintenance/replacement of the sensor will take place upon failure of the shift start-up check.

Both the acoustical detector and vision station are conducting an in-process 100% inspection while the system is in operation. If either one of these devices determine the primer did not fire, then it sends an output to the (PLC) that will in-turn send a signal out to a cylinder that opens up a chute and that cartridge case drops down into a containment container. This does not pose a safety hazard in any way and the SPAM breakdown system continues to run as normal unless there are multiple primers in a row that do not fire. It is currently set to pause the system to investigate the cause after five (5) consecutive primers have not fired. Primers that do not function in the first pass, will be run through the process again, up to three additional passes, until they are functioned.

In the event of a non-functioning primer, the cartridge will be containerized, properly labeled, and transferred to either the APE 1236 incinerator or ABG for treatment. Items that have established incinerator treatment recipes (see Permit Conditions IV.A and IV.C) will be sent to the APE 1236. Items without established recipes will be treated at the ABG in unit 13-ABG (incendiary cage). Functioned cartridge casings are comprised of brass and are visually inspected for residual explosive material. Cartridges that are certified "safe" are transported for recycling and cartridges observed with residual explosive waste and deemed not "safe" are containerized and transferred to the ABG for appropriate treatment.

Inspections of projectiles and functioned cartridges consist of a 100% visual inspection of all surfaces by one (1) qualified and command-designated individual, followed by a separate 100% visual inspection of all surfaces by a second qualified and command-designated individual. After both inspections have been completed, the item is able to be documented as "safe" and recycled, or if determined not "safe", the item will be sent to the appropriate CRANE permitted treatment facility.

To capture emissions from the treatment phase, the primer firing module is equipped with a two phased Air Pollution Control System (APCS). Emissions are first captured by a wet dust collector (ProVent Uni-Wash Model UC-10), then subjected to a dry cartridge filtering system (Donaldson Torit Model DFE02-4). The fixed-throat venturi wet scrubber operates at 385 ACFM and a differential pressure of 0.1 to 4 inches of water column. The wet scrubber vents to a cartridge baghouse utilizing four (4) ultraWeb filters operating at 1,500 ACFM and cleaned using Jet Pulse once per week. Combined these two components capture all residual dust ash generated by the primer firing module. In addition, the pull apart enclosure (includes pull apart machine and propellant dump station) and propellant accumulator are both equipped with a wet scrubber/uni-wash wet type dust collector. The fixed-throat venturi wet scrubber operates at 1,000 ACFM and a differential pressure of 0.1 to 4 inches of water column. Scrubber water from all three (3) scrubbers is recirculated until removed for disposal. The set point or frequency for changing out of the water has yet to be determined. Water from the scrubber supporting the primer functioning device is anticipated to be lead contaminated (potentially other heavy metals), and will be managed as hazardous waste accordingly based on analytical results. Water from the two scrubbers that support the propellant recovery system is anticipated to be non-regulated waste. The material will be sampled and managed accordingly. Each scrubber unit holds 42-gallons of water. All water generated from the scrubber units will be stored at a less than 90-day storage area outside of Building 146, in a con-ex storage unit with secondary containment. The exact location of this storage unit has yet to be determined, but will most likely be situated somewhere between Building 146 and the propellant accumulator building.

**Figure D-2** presents the SPAM system disassembly drawings and process flow control diagrams. This figure also identifies the approximate locations of pollution abatement equipment and the anticipated location of the less than 90-day storage area for waste scrubber water. The major system components of the SPAM, as shown in the process flow diagram, are:

- Line Loading Cell (two pick and place robots);
- Projectile Cartridge Case Pull Apart Station (Pull head that pulls the projectile from the cartridge case);
- Propellant Dump-vacuum Hopper (Propellant removed from cartridge case);
- Primer Functioning System (Primer is fired within a safety chamber);
- Wet scrubber system;
- Cartridge Filter System;
- Projectile Palletizing System (Prep projectiles for shipping to temporary storage or awarded contractor if planned for reuse)

**Exhibit G-11** presents the equipment layout of the SPAM and evacuation routes. **Figure D-4** presents the Primer Functioning System plan view drawing. **Figure D-10** presents specification data for the APCS filtering system.

#### **D-8b** Waste Characterization

Process knowledge is utilized to obtain information on the physical and chemical characteristics of wastes treated in the CDC. Sampling and analysis of well documented ordnance and energetic material is not proposed. This unit could treat wastes generated from off-site.

The primary RCRA characteristic associated with the waste military munitions/explosives treated in the OB/OD units is reactivity (D003) due to the presence of energetic materials. Some of these wastes may have a secondary characteristic of toxicity, due to the presence of metals (D004 through D011), 2,4-DNT (D030), and hexachlorobenzene (D032).

#### **D-8c Treatment Effectiveness**

Primer functioning in the SPAM is an effective treatment for the D003 explosive waste material. The military energetics (propellants, explosives, and pyrotechnics) contained in the item result in the classification of these items as reactive (D003) due to their potential to explode. Energetics are designed to explode or burn vigorously and react completely when exposed to an initiating source. These explosions or vigorous reactions occur whether they are used as designed in warfare or treated in the SPAM. The SPAM treatment process is designed to mechanically remove the secondary explosive (propellant), and function the primary explosive (primer) as designed. Each cartridge that is functioned will generate an audible response from functioning of the primer, in addition to visual evidence from the primer being dented during treatment.

A similar firing device model located and tested at Tooele Army Depot had one (1) round not fire out of 4,063 rounds. The round that did not fire was passed back through the system seven times and it would not function, therefore the round was determined to have a faulty primer.

### **D-8d Environmental performance Standards**

This unit has separate wet and dry air pollution control systems which should make any emissions negligible. A Title V air permit application has been submitted to IDEM and is currently under review. The SPAM until will be added to the overall risk assessment after IDEM and EPA comments have been incorporated. The potential impacts from this unit should be well below the risks calculated for the Mobile Plasma Treatment System and Contained Detonation Chamber. If Title V stack testing is required for this unit, the results will be incorporated into the risk assessment update.

Empty cases with the primer shall be processed through the primer firing module as they are generated from the propellant recovery operation. Primers that are not initiated in the first pass shall be run through the process again, for up to three additional passes, until they are initiated. Any primers that are not initiated shall be accumulated and processed in the APE 1236 incinerator or another appropriate permitted facility.

## D-8d(1) Protection of Groundwater and subsurface Environment

The system is located within a building equipped with containment to capture any spills that may occur, there are no anticipated effects to groundwater or subsurface.

## D-8d(2) Protection of Surface Water, Wetlands, and Surface Soil

The system is located within a building equipped with containment to capture any spills that may occur, there are no anticipated effects to surface water, wetlands, and surface soils.

### D-8d(3) Protection of the Atmosphere

The APCS is a self-contained and comprised of a two phased filtering systems. This system is further addressed in the Title V air permit.

### D-8e Monitoring, Analysis, Inspections, Response, Reporting, and Corrective Action

General waste analysis requirements for the SPAM are addressed at Section C-2a. General inspection requirements as required by 40 CFR §264.15 for the SPAM are provided at Section F-2b(a). Testing procedures for equipment including the SPAM as required by 40 CFR §264.33 are described at Section F-2b(b). CRANE submits a biennial report as required by 40 CFR §264.75 for all hazardous waste facilities, including the SPAM. Reports of any unmanifested wastes received by CRANE are submitted to IDEM as required by 40 CFR §264.76. CRANE will submit any additional reports required by IDEM in accordance with 40 CFR §264.77. Corrective action for solid waste management units (SWMUs) at CRANE is addressed at the Introduction, Section J.

The information required by 40 CFR 264.602 is addressed in the following:

- a. General inspection requirements: Section II.F-2.a, II.F-2.b,
- b. Testing and maintenance of equipment: Section II.F-2.a, II.F-2.b,
- c. Additional reports: Appendix 1 Contingency Plan, Section G-8
- d. Corrective Action: Attachment V, Section J

Biennial reports: A biennial report shall be submitted covering facility activities from the previous calendar year, and will be submitted to the Regional Administrator by March 1 of each even-numbered year.

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Unmanifested waste report: If CRANE accepts for treatment, storage, or disposal of any waste from an off-site source without an accompanying manifest and the waste is not excluded from the manifest requirement, then CRANE must prepare and submit an unmanifested waste report to the Regional Administrator within 15-days after receiving the waste.

## D-9 Boilers and Industrial Furnaces (BIFs)

This section does not apply to the SPAM operations.

## **D-10** Containment Buildings

This section does not apply to the SPAM operations.

## E. GROUND WATER MONITORING

This section does not apply to the SPAM operations.

## E-1 Exemption from Ground Water Protection Requirements

This section does not apply to the SPAM operations.

## E-2 Interim Status Ground Water Monitoring Data

This section does not apply to the SPAM operations.

## E-3 General Hydrogeologic Information

This section does not apply to the SPAM operations.

## E-4 Topographic Map Requirements

This section does not apply to the SPAM operations.

## E-5 Containment Plume Description

This section does not apply to the SPAM operations.

## E-6 General Monitoring Program Requirements

This section does not apply to the SPAM operations.

## E-7 Detection Monitoring Program

This section does not apply to the SPAM operations.

## E-8 Compliance Monitoring Program

This section does not apply to the SPAM operations.

## E-9 Corrective Action Program

This section does not apply to the SPAM operations.

## F. PROCEDURES TO PREVENT HAZARDS

## F-1 Security

F-1a Security Procedures and Equipment

Much of the security provisions for areas affected by this permit are addressed in Attachment O, Introduction, Section F-1. Only those items specific to the SPAM Unit are addressed here.

## F-1(a)(2)(a) Barrier

The SPAM Unit is located within building 146 which is completely surrounded by a 8-foot high chainlink security fence, all located within the CRANE installation's perimeter fence. The building doors are kept locked when not in use. The building doors are equipped with "panic hardware" on the inside, to allow immediate emergency personnel exit.

## F-1a(2)(b)2 Control of Entry

As indicated above section F-1a(2)(b)2, the SPAM unit is located within building 146 which is completely surrounded by a 8-foot high chain-link security fence, all located within the installation's perimeter fence. Access to the SPAM may only be gained through a locked gate in the installation perimeter fence. Access controls for the SPAM are shown in **Exhibit B-7**.

All entry points are locked when not in use; keys are maintained by authorized personnel, including the hazardous waste facility operators, the Officer of the Day, and the Police/Fire Shift Commander.

While running during normal operation, the system monitors the gate to prevent anyone entering while running. The complete system shuts down if the gate is opened while system, is operating. No personnel is allowed within the SPAM fencing during this time of operation. The complete system is operated and monitored at a safe distance with camera and monitor system.

## F-1a(3)(b) Warning Signs

Signs reading "Danger – Unauthorized Personnel Keep Out" that are legible from 25 feet are posted at each door leading into the SPAM Unit.

### F-1b Waiver

CRANE is not requesting any waivers from security procedures and equipment requirements. Therefore, this section is not applicable.

### F-2 Inspection Schedule

#### F-2a General Inspection Requirements

All hazardous waste management sites, including the SPAM Unit, are regularly inspected by CRANE and CAAA hazardous waste facility operators (hazardous waste handlers), and by Environmental Protection management personnel.

Inspections are documented in inspection logs. The inspection log serves as the written record of the results of implementing the Operational Inspection Schedule. In accordance with 40 CFR 264.15(d), the Inspection Log is kept onsite and a copy is maintained in the Environmental protection office building 3260 at CRANE.

Specific inspection requirements are described in Section F-2b.

F-2a(1) General Inspection Requirements/Frequency of Inspections

Frequencies of inspections are described in Section F-2b.

### F-2a(2) General Inspection Requirements/Types of Problems

The types of problems that inspectors look for during inspections are described in Section F-2b.

F-2b	Specific Process Inspection Requirements
F-2b(1)	Container Inspection

Cartridge primer functioning in the SPAM Unit results in the destruction of the energetic portion of the munitions/component and deactivation of the reactivity characteristics of the materials. The treated munitions/components (projectiles) are visually inspected to determine if there is residual explosives. Items certified as safe are placed in appropriate containers and submitted for recycling. Cartridges with residual explosives are containerized and transported to the appropriate treatment facility. APCS residue from the baghouse is collected into 55-gal drums. These residues are evaluated for RCRA hazardous characteristics and managed appropriately.

## F-2b(2) Tank System Inspections

CRANE does not store or treat wastes in tank systems. Therefore, this section is not applicable.

F-2b(3) Waste Pile Inspections

CRANE does not store or treat wastes in waste piles. Therefore, this section is not applicable.

#### F-2b(4) Surface Impoundment Inspections

CRANE does not store or treat wastes in surface impoundments. Therefore, this section is not applicable.

### F-2b(5) Incinerator and Associated Equipment

This section identifies daily and monthly inspections that are performed at the SPAM Unit.

#### F-2b(6) Landfill Inspections

CRANE does not dispose of wastes into landfills. Therefore, this section is not applicable.

#### F-2b(7) Land Treatment Facility Inspection

CRANE does not treat wastes in land treatment facilities. Therefore, this section is not applicable.

#### F-2b(8) Miscellaneous Unit Inspections

#### F-2b(8)(a) Daily Inspections

The following items are inspected daily when the SPAM Unit is in operation:

Item			Inspected for:
(a)	Feed Room	m	Cleanliness, debris, feed conveyor
(b)	Radio Ala	rm System	Dial Tone
	Telephone	;	(place call to the Environmental Protection office)
(c)	Fire Extin	guishers	Seal intact
			Gauge reads in the green
(d)	(d) Fence/Warning Signs		Warning signs in place and visible
			Check for damage or support post foundation erosion
(e)	Gates/Gat	e Locks	Defective; open/close appropriately, locks working and are locks in place
(f)	Doors/Door Locks		Open/close appropriately, locks working and are locks in place
(g)	Operating procedures		Present/available
(h)	Personal Protective Equipment		
	(1)	Protective Gloves	Present/Available
	(2)	Chemical Resistant Coveralls	Present/Available

Any items that do not function properly will be corrected as necessary to ensure safe operations of the SPAM Unit. **Exhibit F-6** presents SPAM Unit daily inspection form.

## F-2b(8)(b) Monthly Inspections and Equipment Tests

The monthly inspection includes flushing the safety eyewash stations and emergency showers. The monthly inspections are performed by the SPAM Unit operators. Each eyewash and shower station is tagged with the time and date of the most recent inspection.

## F-2b(8)(c) Annual Inspections and Equipment Tests

The CRANE Fire Protection/Prevention Branch conducts annual tests and checks of the radio signalcontrolled fire alarm system that is in operation at building 146. The detection sensors are heat-activated and, when activated, send a signal to the Fire/Security Communication desk. The test includes activation of the sensors in the normal AC powered mode and in backup DC-powered mode.

Additionally, the yearly inspection includes checking the pressure and flow rates of the fire hydrants. The Fire Prevention/Protection Branch will maintain the annual inspection records.

### F-3 Waiver of Documentation of Preparedness and Prevention Requirements

CRANE has facility-wide documentation of on-site preparedness and prevention measures. The procedures for hazardous waste management facilities are addressed in the Contingency Plan and Emergency Procedures. The Contingency Plan is an evergreen document, always in use and continually updated. The Contingency Plan is retained at the EP office and Fire Protection/Prevention Branch, and copies are provided for other critical operations. The general content of the Contingency Plan is provided in the attached supplement.

The Contingency Plan sets forth the procedures that are used to minimize or prevent damage to human health and the environment from any sudden or non-sudden discharges of hazardous waste or hazardous waste constituents. Though the likelihood of a release of hazardous wastes or substances is minimized by implementation of operating and emergency procedures, the possibility of a release must always be recognized. Due to the nature of the substances used and managed at CRANE, a likely result of a sudden release, should one occur, is fire and explosion.

Because of the possibility for fire or explosion, CRANE operates and maintains its own fire department. Personnel of the CRANE Fire Protection/Prevention Branch are appropriately trained to manage the types of emergencies that are possible because of the potentially explosive nature of materials, products, and by-products. The fire department is on alert at all times to handle the types of fires that could occur during the management of hazardous wastes at the facility.

CRANE operates under explicit fire-fighting instructions formulated to protect the health and safety of the installation employees, and prevent the spread of fire into adjoining areas. The major provisions of these procedures are as follows:

(1) All fires are reported immediately to the Fire Protection/Prevention Branch. The decision to fight the fire or let it burn is made on a case-by-case basis, and is determined based on the hazardous classification and characteristics of the materials involved in the fire. If it is adjudged too hazardous to fight the fire, Fire Protection/Prevention Branch personnel remain at the scene to contain the fire, prevent access to dangerous areas by non-authorized personnel, and to keep the fire from spreading to adjacent areas.

(2) All transportation vehicles, offices, and operating areas are provided with a water or a hand-held fire extinguisher. The type of extinguisher provided corresponds to the nature of the materials handled or

processed in that area. Operating personnel are instructed in the proper selection (by type) and use of the extinguisher(s).

(3) Operating personnel are also instructed to use the extinguishers only to fight minor fires, and only if there is no personal danger involved from doing so. In all cases, the Fire Protection/Prevention Branch is always notified immediately about any fire.

(4) Hazardous waste management facility internal communications are made by direct voice contact. Communications (internal and external), implementation of emergency or rescue procedures, and other related emergency response procedures are found in greater detail in the Contingency Plan.

## F-3a Equipment Requirements

## F-3a(1) Internal Communication

The SPAM Unit is equipped with an internal communication or alarm system that is used to make Crane personnel aware of a situation requiring a need to evacuate the unit. Evacuation requirements will be determined on an incident-by-incident basis. Within the SPAM Unit there are two enclosures, Breakdown/Packing Room and the Primer Functioning Cell.

The Breakdown-Packing Room is approximately 60 feet wide by 60 feet long with eight singlewide exit doors and two rollup doors. A voice notification would be used if there should be an emergency event while this room is occupied.

The Primer Functioning Cell is approximately 14 feet wide by 16 feet long with one eight foot wide doublewide exit door. A voice notification would be used if there should be an emergency event while this cell is occupied.

## F-3a(2) External Communications

In the event of an incident involving a fire that is determined to be not controllable by a fire extinguisher, the manual alarm is pulled (if an alarm has not already been activated by heat). The locations of these alarm switches are inside, near the exits, at each end of the building. They activate local audible alarms and provide notification to the Fire/Security Department.

Other means of summoning emergency assistance and providing communications include two-way radios in vehicles used to transport operators to the SPAM, as well as a telephone outside of the facility.

In addition, CRANE has a facility-wide telephone network that is serviced by Communications Products Inc. (CPI). These lines are used for both on-site and off-site calls, and can be utilized to provide emergency information or instructions to facility personnel, emergency response teams, fire departments, and police departments. A Security radio net is also employed at CRANE, consisting of a base station and portable two-way radios.

## F-3a(3) Emergency Equipment

The SPAM Unit has one  $CO_2$  fire extinguisher at the unit. This  $CO_2$  fire extinguisher is of sufficient capacity to suppress the size fire that SPAM Unit operators alone could logically and safely extinguish.

The CRANE Fire Protection/Prevention Branch typical emergency response time is five to six minutes. **Exhibit G-8** (of the Contingency Plan) contains a list of the fire fighting and control equipment available to the SPAM emergency response personnel. The CRANE firefighting personnel are trained to respond to hazardous material incidents, but fires involving explosives would normally not be fought.

## F-3a(4) Water for Fire Control

Lake Greenwood is the primary source of water for CRANE. The central water-treatment plant is rated at 2.16 million gallons per day. Approximately 600,000 gallons of water are allocated for fire protection.

The water is discharged into the main fire distribution system under a constant pressure of between 40 and 70 pounds per square inch gauge (psig).

Building 146 is equipped with an automatic sprinkler system. Additionally, a fire hydrant is located on the southwest corner of the SPAM unit.

## F-3b Aisle Space Requirements

The SPAM System is equipped with a security gate and fence that completely surrounds the SPAM System and all of its breakdown equipment. While running during normal operation, the system monitors the gate to prevent anyone entering while running. The complete system shuts down if the gate is opened while system, is operating. No personnel are allowed within the SPAM fencing during this time. In the event of an emergency while system is idle, the layout of the SPAM Unit allows for the unobstructed movement of emergency personnel and equipment to any location within the SPAM Unit. **Exhibit G-11 and Figure D-2** presents the layout of the SPAM Unit. The complete system is operated and monitored by the operators at a safe distance utilizing a camera monitor system.

## *F-3c* Arrangements with Local Authorities:

Documented agreements, arrangements, letters to hospitals and responses are found in **Exhibit G-14**. CRANE does not have an agreement with a specific contractor to clean up hazardous waste spills. **Exhibit G-9** lists contractors that could be hired.

## F-4 Preventive Procedures, Structures, and Equipment

## F-4a Unloading Operations

All hazardous wastes treated at the SPAM Unit are classified as D003 (reactive) wastes. Hazards could occur during loading and unloading operations. Mishandling of D003 wastes during loading and unloading of transport vehicles, transportation, unloading of transport vehicles, and loading of treatment units could result in personnel injury, accidental fires or explosions, and/or releases to the environment. CRANE routinely loads, transports, and unloads explosive materials. Procedures have been established to address hazards that could occur during the handling and transportation of explosives. These procedures are also applied to the handling of D003 wastes treated at the SPAM Unit. Following is a summary of the procedures that have been established to address hazards associated with D003 wastes that could occur during loading of transportation, and unloading of transportation vehicles at the open burning and open detonation treatment units.

General Handling Requirements for D003 Wastes:

- Explosive-loaded ammunition, packaged ammunition, bulk explosives, and explosive (D003) contaminated waste materials must not be handled roughly, thrown about, tumbled, dropped, or carried over other explosives or ammunition. Large ammunition items, packaged in Department of Transportation (DOT) approved containers designed to permit dragging, rolling, or towing, may be so moved when necessary during handling for storage and transportation.
- Material handling equipment (MHE) and other lifting devices must be marked with a load rating and the date of next inspection. The load rating must not be exceeded, and the equipment without a current inspection date must not be used.
- Any defect or unusual condition that is observed must be reported immediately to supervisory personnel.
- When performing operations requiring lifting, personnel must use proper lifting techniques, safe hand holds, assume proper lifting positions, avoid twisting when lifting or carrying, avoid sharp objects and avoid pinch or snip points.

Requirements for Transport Vehicles:

- Vehicles transporting D003 wastes must be inspected monthly and certified safe and serviceable. The vehicles must be equipped with a non-sparking bed, two fire extinguishers and appropriate fire symbols.
- Exhaust systems must be kept in good mechanical repair at all times.
- No more than two persons may ride in the cab of carrier transporting D003 wastes. Only the authorized vehicle driver and assistant are permitted to ride in vehicles moving D003 wastes and / or explosive demolition material.
- Appropriate fire symbols and/or chemical hazard symbols must be displayed on vehicles used in transporting ammunition (including D003 wastes). These symbols must be affixed to the vehicle when the first D003 item is loaded for movement of D003 or explosive material to the service magazine and/or to the treatment unit.
- Fire symbols must be turned or removed at such time as the carrier is empty of explosive materials (including D003 wastes).
- Non-containerized explosives (including D003 wastes) must not be transported in a motor vehicle. Munitions must be packed in closed containers.
- Munitions and containers must be braced and stayed to prevent material movement while the vehicle is in motion.
- Explosives and/or munitions (including D003 wastes) may not be loaded or unloaded while the vehicle motor is running. The parking brake must be set and one wheel chocked if on a grade.
- When D003 wastes are moved to destruction site by truck, a route should be selected to minimize travel through and stopping in congested areas.

General Procedures for Unloading

- Trucks and tractors with trailers positioned for unloading must have parking brake set and wheels chocked.
- No explosives, ammunition, or other hazardous material may be unloaded from vehicles while their engines are running.
- Two Class 2A fire extinguishers must be available during unloading operations.
- Personnel will use MHE to the greatest extent possible that is consistent with safe and efficient operations.
- Personnel cutting steel strap bands must wear leather gloves and safety glasses.
- Empty vehicles must have "Fire Hazard" symbols covered and be removed from the destruction site when no longer necessary to the operation.

### F-4b Runoff Prevention

The SPAM unit is enclosed entirely within Building 146 and not subject to run-on from precipitation. The floors of the building are constructed of concrete. Any staging of drums, containers, packages, or pallets is conducted within the enclosed building on a concrete pad.

### F-4c Water Supplies

The potential for contamination of ground water or surface water as a result of SPAM Unit treatment operations is extremely low. The SPAM Unit is located within building146. All treatment of hazardous wastes takes place within an enclosed chamber. All SPAM Unit treatment residues are collected in containers. The floors of the SPAM Unit enclosures are constructed of concrete. The design of the SPAM Unit precludes run-on into the SPAM Unit. Section D-8a(1) above describes the design of the SPAM

Unit. In addition to these factors the SPAM Unit operating and emergency procedures will prevent the contamination of ground water and surface water during normal operations or any upset conditions.

## F-4d Equipment Failure and Power Outages

The facility electrical source is provided by Duke Energy and distributed to two CRANE substations. This configuration permits a radial distribution of power from one substation, while the other is deenergized only a portion of the year. In addition, if there is a loss of power from Duke Energy, CRANE has formalized agreements, whereby, they can switch over to power from Hoosier Energy.

In case supplied power fails, CRANE has numerous gasoline and diesel-powered generators, which will operate pumps and heating systems, if required. The emergency alarm system automatically switches to DC backup power if the main power fails.

In the unlikely event of generator failure, the SPAM Unit has been designed with "fail safe" devices. The "fail safe" devices include automatic valves and dampers that "fail" into an open or closed position to prevent cascade reactions or equipment over pressuring, pressure relief valves, and automatic feed shutoff.

Therefore, the SPAM Unit would not be adversely affected by a main power outage.

## F-4e Personal Protection Equipment

An assessment of the appropriate level of personal protective equipment (PPE) is made for each type of waste that is treated in the SPAM Unit, and will be specified in the applicable standard operating procedure (SOP). At a minimum this equipment includes conductive safety toe shoes, flame retardant coveralls, safety glasses, and gloves during operations. Personnel protective equipment is also specified for each type of waste material that is treated in the SPAM Unit in the applicable SOP. Every SOP contains a section describing safety requirements including personnel protective equipment. All SPAM Unit personnel are trained in the proper use of the personnel protective equipment.

### F-5 Prevention of Reaction of Ignitable, Reactive, and Incompatible Waste

### F-5a Precautions to Prevent Ignition or Reaction of Ignitable or Reactive Waste

Most of the wastes treated in the SPAM Unit are RCRA reactive (D003) wastes for explosive hazards. Some of the wastes are also RCRA ignitable (D001). Therefore, all of the procedures used in the SPAM Unit are designed to prevent accidental ignition or reaction of ignitable or reactive waste materials. General safety precautions to be followed for preventing ignition or reaction of the wastes treated include the following:

- No smoking, matches, lighters, open flames, or other unauthorized ignition sources are permitted in the SPAM Unit.
- No cutting, welding, activities involving hot surfaces, frictional heat, radiant heat, or other heatproducing activities are permitted in the SPAM Unit whenever ignitable or reactive wastes are present.
- Spark-producing equipment and tools are prohibited from use when ignitable or reactive wastes are present.
- Incompatible materials (e.g. D003 wastes and ignition materials) are kept separate from each until placed into proximity for treatment.
- All operating personnel are trained.
- Established procedures are followed when loading and unloading reactive waste materials [See Section F-4a].

## F-5b General Precautions for Handling Ignitable or Reactive Waste and Mixing of Incompatible Waste

- Crane Army Ammunition Activity (CAAA) Safety Office has a rigorous hazardous materials safety program. Specific precautions to prevent accidental ignition or reaction of waste are taken during all SPAM operations, loading and unloading, and transportation. Procedures are clearly described in the Navy Safety manual, OP 5; AMC-R 755-8; and Standing Operating Procedures. The following are key precautions taken:
- 1. Adverse Weather Conditions There is a Lightning Prediction System that generates a "Red Alert" warning if lightning is nearby. If a "Red Alert" is issued, all explosives operations are halted until conditions are returned to "All Clear."
- 2. Personnel Safety Precautions:
  - No flame-producing devices (e.g., matches, cigarette lighters) are allowed within the SPAM Unit area. Signs indicating this are conspicuously placed in all areas where there is a hazard from ignitable or reactive wastes. Smoking is limited to designated indoor areas at CRANE. No smoking is allowed at any of the areas to be permitted. Cutting, welding and spark producing tools are not used at the facility except when properly permitted by the Fire Department, Fire Prevention Inspectors. When necessary, all ignitable hazards will be moved and a manned fire truck may be on hand as stand-by.
  - Non-sparking tools (e.g., aluminum, brass, beryllium or wood) are used. Containers of waste explosives are properly labeled and sealed.
  - No inert chemical and explosive wastes are brought into contact with each other to assure that no heat-producing chemical reactions occur.
  - Reactive or ignitable wastes are shielded from direct sun.
  - All hazardous waste containers are inspected thoroughly. Any defects or foreign material must be reported to the operator for disposition.
  - Precautions are taken to control decomposition of any explosives accumulated in supplies and cleaning equipment, such as mops, brooms, and similar items.
  - Cleaning equipment that has been contaminated is placed in clearly marked covered containers, and must be handled in an approved manner.
  - All hazardous waste containers are labeled or stamped.
  - Periodic conductivity tests of safety shoes and calibration checks of the Conductive Shoe Tester shall be performed as specified by the area supervisor in the instructions posted at the site of the testing.

Demilitarization operations at the SPAM unit will be conducted in strict accordance with the procedures set forth in the Navy Safety Manual, OP 5: the Army Safety Manual, AMC-R 385-100; Army Environmental Protection and Enhancement, AR 200-1; and AMC-R 755-8. The primary purpose of these regulations is to ensure protection of personnel and the environment. It is the opinion of both the Army and the Navy that the aforementioned procedures adequately address concerns dealing with handling ignitable or reactive waste.

### G. CONTINGENCY PLAN

The primary copy of the Contingency Plan and Emergency Procedures (the Contingency Plan) is kept in the Environmental Protection office, with a copy issued to the Crane Emergency Coordinator and Fire Department. Details of the Contingency Plan are provided in Attachment O, Introduction, Section G.
Wastes for treatment at the SPAM are handled only for the purpose of feeding them into the SPAM Unit. All of the wastes treated are solids.

Munitions awaiting treatment could potentially detonate prior to being placed on the SPAM Unit feed conveyor. It is extremely unlikely that the SPAM Unit treatment residues, air pollution control system (APCS) residues, or metal residue would present a detonation/explosion hazard. In all cases the hazard would be limited to the SPAM Unit through exposure to potential bodily injury or death. Off-site impacts would not occur as a result of unplanned/uncontrolled explosion or fire.

The SPAM Unit could be damaged as a result of excessive energetic levels in some feed items resulting in explosions that could damage the SPAM Unit. Damage resulting from excessive energetic levels in feed items is not considered to be a significant possibility.

In summary, the principal emergency event that might occur at the SPAM is an unplanned/uncontrolled explosion or fire, which would not have off-site impacts.

## H. PERSONNEL TRAINING

CRANE provides the same level of training to all employees who manage hazardous waste handling employees. The training program for its personnel is a common program for all its hazardous waste management operations and not specific to the individual Part B operations. The personnel training is described in detail in Attachment O, Introduction.

## H-1 Outline of the Training Program

See Attachment O, Introduction.

## H-2 Implementation of Training Program

Implementation of the training program is described in Attachment O, Introduction, Section H.

# I. CLOSURE PLANS, POST-CLOSURE PLANS, AND FINANCIAL REQUIREMENTS

#### I-1 Closure Plans

A written copy of the Closure Plans for the SPAM facility is available at the CRANE Environmental Protection (EP) office.

# I-1a Closure Performance Standard

Upon completion of SPAM activities, CRANE will negotiate and formalize an agreement with a designated contractor for closure activities. The contractor environmental coordinator will supervise the closure activities, including the packaging, transportation, and removal of any hazardous wastes generated by the closure procedure.

During closure activities, all components of the SPAM Unit including the Primer Firing Scrubber System and Primer Firing Final Cartridge Filtering System will be cleaned to remove hazardous waste residues. Metallic components will be recycled as scrap metal. Nonmetallic components will be disposed as solid wastes. Any nonmetallic components that cannot be cleaned below levels of characteristic waste will be disposed as hazardous wastes. Additionally, instrumentation and other hardware that is uncontaminated (or decontaminated) will be removed and salvaged.

Section I-1d describes procedures for determining whether contamination exists at the SPAM Unit during closure and, if necessary, the procedures for decontamination. If necessary, buildings, equipment, and adjacent grounds will be decontaminated until confirmation sampling and analysis test demonstrate that cleanup to regulatory levels has been achieved. Disposal of any hazardous residues generated, as part of

the decontamination procedures will be at a permitted hazardous waste management facility. Removal and disposal of any building components that cannot be decontaminated will be performed in an approved manner. Upon completion of these procedures, any remaining structures that are not contaminated or that have been decontaminated may be refurbished and rededicated to other purposes or demolished with the resulting debris disposed of as a conventional, nonhazardous demolition waste. This approach will eliminate the need for post-closure maintenance and controls.

# I-1b Partial Closure and Final Closure Activities

Partial closure is not anticipated for the SPAM Unit at this time. The SPAM Unit will remain 100 percent in service during its operational life.

# I-1c Maximum Waste Inventory

Waste will be stored at the Building 146 complex that houses the SPAM Unit. The maximum inventory of waste munitions that could be present would be 9,600 lbs. NEW or 20,000 lbs. gross weight. The SPAM Unit will not be closed until all material accumulated at the unit has been processed. If one of the SPAM components should malfunction and cannot be made operational prior to treatment of all the accumulated feed material, the excess waste feed will be removed and either treated in another permitted facility or returned to a conditionally exempt munitions/explosives storage facility. The maximum hourly net explosive weight (NEW) waste feed rate and the gross hourly waste feed rate are 240 pounds per hour (lb./hr.) and 500 lb./hr., respectively. If the SPAM Unit were to operate at the maximum waste feed rate and at the maximum daily operating hours [e.g., 20 hours per day (hr./day)], then the maximum gross waste feed at the SPAM Unit would be 4,800 lb. NEW or 10,000 lb. gross weight. The primary RCRA characteristic associated with the waste military munitions/explosives treated in the SPAM is reactivity (D003) due to the presence of energetic materials.

# I-1d Inventory, Removal, Disposal, or Decontamination of Equipment

No inventory of hazardous waste will be present at the SPAM Unit when closure is initiated. Therefore, inventory removal and subsequent disposal will not be an issue because all wastes scheduled for treatment will have already been treated, or they will be rescheduled for treatment at other permitted facilities. Regardless of the status of hazardous wastes meeting waste acceptance criteria for the SPAM Unit at the time of closure, these wastes will not be located at, or subject to treatment in the SPAM Unit when closure is commenced.

At closure, the SPAM and the APCS will be operated until the equipment is empty. The 55-gallon residue drums will be removed. The SPAM Unit system and the APCS will then be dismantled for subsequent decontamination and disposal.

# *I-1d (1)* Criteria for Determining Equipment and Structures Contamination; Success of Decontamination; and Disposal of Contaminated Residues

None of the components of the SPAM Unit are expected to be reactive or contain reactive residues. Metallic portions of the SPAM Unit will be cleaned to the bare metal by removal of all residues utilizing techniques such as steaming, brushing, scraping, grinding, etc. When cleaned, they will be certified as explosive free and subsequently recycled as scrap metal. Certification as explosive free may require treatment by flashing. Flashing would take place at the permitted Ammunition Burning Grounds. This would most likely be required for components containing spaces inaccessible for visual observations.

All residues including the APCS will be evaluated for RCRA characteristic and managed appropriately. None of the residues resulting from closure activities are expected to be reactive, but may likely contain lead. The processes for determining the presence of contamination are described in the following section. The SPAM Unit system and APCS will be dismantled for subsequent disposal, as described in the following subsections.

The APCS will be dismantled. Prior to dismantling, the collected wet sludge and dry HEPA filters will have been removed from the APCS as part of normal operations. The containerized waste will be collected and will be evaluated for RCRA characteristic and managed appropriately. Metallic components of the APCS will be cleaned of removable residue using the techniques described above. The metallic components will be recycled as scrap.

The SPAM Unit other miscellaneous metallic components will be cleaned of removable residue using the techniques previously described. The residue will be containerized and will be evaluated for RCRA characteristic and managed appropriately. Metallic components will be flashed if needed, and recycled as scrap.

After all the SPAM Unit system equipment has been removed, the concrete pad and walls will be cleaned as identified in Section I-1d(2).

The collection of surface or subsurface soil samples are not aniticipated at this time due to the Building 146 Facility being an active SWMU.

# *I-1d(2)* Potentially Contaminated Surface Sampling (Concrete)

Before decontamination, all paved areas, concrete pads, containment systems, structures, and sumps related to the SPAM unit will be visually inspected to identify cracks, gaps, spills, stains, or damaged areas that may be present. This visual inspection will be documented in the closure certification report with notations of any identified problems. Any cracks, gaps, or damaged areas will be repaired by grouting or sealing before decontamination is performed in order to prevent the further release of contamination into underlying soil.

Decontamination of paved areas, containment systems, and sumps will include the following:

- Visual inspection
- Waste removal
- Mechanical cleaning (scraping or sweeping)
- Repair of damaged unsealed areas
- Low-volume, high-pressure washing (can include steam or detergent for more effective cleaning)
- Three successive low-pressure ambient-temperature water rinses
- Sampling and analysis of finale rinsate to confirm decontamination

The first two water rinses described above should remove both residual wastes and any detergents used during washing. The third or final rinse will provide the source of verification samples. Verification of decontamination must be provided to confirm that closure levels have been met.

At least two samples of the final rinsate will be analyzed for the hazardous constituents identified in the waste as defined in 40 CFR 261, Appendix VIII, for hazardous waste constituents as defined in 40 CFR 260.10. The two rinsate samples are field duplicates for the rinsate. The final rinsate samples should be representative of the entire final rinse. Rinsate samples to be analyzed for metals will be filtered to remove solid particles prior to sample preservation. **Table I-2** provides test methods for rinsate samples.

Decontamination procedures will be repeated until closure levels are met. If closure levels are not met after two iterations of decontamination procedures, IDEM will be consulted for further guidance. Decontamination of storage pads will include the following:

• All waste are removed from the pad and appropriately disposed of.

- The pad is mechanically cleaned by scraping, sweeping, or other methods to remove all physical contamination.
- The pad is inspected for cracks. If cracks are detected, items 10 and 11 may be performed at this point.
- The cracks are sealed.
- The pad is washed using a high-pressure steam cleaner with detergent or appropriate solvent to remove previously stored waste materials.
- The pad is rinsed three times with water. Low-pressure, ambient-temperature rinses should be used.
- The third (final) rinsate is collected separately, and two samples are analyzed to show that the pad's surface meets closure levels. For inorganic and certain organic parameters, closure levels will be based on the MCLs of the National Primary Drinking Water Regulations (40 CFR 141) in the rinsate. For organic parameters without MCLs, the closure levels of the rinsate will be based on the EQLs of the analytical methods as defined in SW-846. Analytical parameters will be based on wastes previously stored in the area.
- Care taken to prevent the migration of cleaning liquids from the pad area.
- All residues and rinsates are collected and disposed of as hazardous waste unless the residues and rinsates are analyzed and determined to be non-hazardous.

# I-1d(3) Soil Sampling

Not applicable, CRANE does not intend to sample soils surrounding the Building 146 facility. The SPAM unit is located in the Building 146 facility, which is an active SWMU managed under the corrective action program in accordance with Section J of Attachment 0.

# I-1d(4) Methods to Perform Soil Decontamination

Not applicable, CRANE does not intend to sample soils surrounding the Building 146 facility.

# I-1d(5) Procedures to Evaluate Effectiveness of Decontamination for Soil

Not applicable, CRANE does not intend to sample soils surrounding the Building 146 facility.

# *I-1d(6)* Decontamination of Cleanup Materials and Residues

Any wash or rinse solutions generated as part of the cleanup operation will be vacuum-collected and removed to a permitted disposal facility based upon analytical results.

# I-1e(4) Closure of Tank Systems

CRANE does not store or treat hazardous wastes in tank systems; therefore, this section is not applicable.

# I-1e(5) Closure of Waste Piles

CRANE does not store or treat hazardous wastes in waste piles; therefore, this section is not applicable.

# *I-1e(6)* Closure of Surface Impoundments

CRANE does not store or treat hazardous wastes in impoundments; therefore, this section is not applicable.

# I-1f Schedule for Closure

## SPAM Unit Closure Schedule:

The schedule for closure of the SPAM hazardous waste management unit is given in countdown form as follows:

<u>Event</u>	<u>Days</u>
Notification to Commissioner of intent to begin closure	0
Final volume of waste received	45
Begin inventory removal to off-site disposal	45
End decontamination effort	
Begin site restoration	
Finish site restoration	
Submit P.E. Certification of closure	240

All hazardous wastes will be treated, removed off-site, or disposed of on-site within 90 days from the receipt of the final volume of waste at the unit or facility; and all closure activities will be completed within 180 days from the receipt of the final volume of waste at the unit or facility.

# I-1g Extension for Closure Time

No extension of closure time request is anticipated.

# *I-1h* Certification of Closure

Upon completion of closure of the SPAM Unit, the owner/operator and an independent registered professional engineer will certify that closure of the facility was completed in accordance with the specifications contained in the approved closure plan and with 40 CFR 264.115. The closure certification will detail all activities associated with the closure of the facility and will include a map of sampling locations. All tests and results, interpretation of the results, inspection procedures, and other documentation necessary to meet the closure performance standard will be forwarded to the Commissioner of IDEM.

The certification of closure or any submittal of analytical results for closure will include all associated QA/QC data in order for the IDEM to validate the results.

Within 60 days of completion of closure of the hazardous waste treatment unit, CRANE will submit to the IDEM by registered mail, a certification that the unit has been closed in accordance with the IDEM-approved Closure Plan. The Commanding Officer and an independent, qualified, professional engineer, registered in the State of Indiana, will sign the certification. Documentation supporting the independent, qualified, registered professional engineer's certification will be furnished to IDEM upon request.

# I-2 Post-Closure Plan/Contingent Post-Closure

CRANE intends to clean close the SPAM Unit facility with no wastes remaining in place. In the event that a clean closure is not accomplished, CRANE will submit a permit modification to address a Post Closure Plan/Contingent Post Closure in accordance with 40 CFR 264.118.

# I-3 Notices Required for Disposal Facilities

CRANE does not dispose of hazardous waste on-site (e.g., CRANE is not a disposal facility); therefore, this section is not applicable.

# I-4 Closure Cost Estimate

The hazardous waste management units at CRANE are an entity of the Federal Government and are therefore granted specific exemption from the requirements of 40 CFR §264.140.

# I-5 Financial Assurance Mechanism for Closure

The hazardous waste management units at CRANE are an entity of the Federal Government and are therefore granted specific exemption from the requirements of 40 CFR §264.140.

# I-6 Post-Closure Cost Estimate

In accordance with 40 CFR §264.140(c), a post-closure financial assurance mechanism is not required for Federal facilities.

# I-7 Financial Assurance Mechanism for Post-Closure Care

In accordance with 40 CFR §264.140(c), a post-closure cost estimate is not required for Federal facilities.

# I-8 Liability Requirements

The hazardous waste management units at CRANE are an entity of the Federal Government and are therefore granted specific exemption from the requirements of 40 CFR §264.140.

# I-9 Use of State-Required Mechanisms

The hazardous waste management units at CRANE are an entity of the Federal Government and are therefore granted specific exemption from the requirements of 40 CFR §264.140.

# I-10 Closure Plan Amendment

CRANE will maintain the Closure Plan to ensure that it is current and accounts for anticipated closure activities. The Closure Plan will be amended when the following events or contingencies occur:

The expected reasons that warrant closure of the SPAM unit change.

Changes in operating plans or unit design affect this Closure Plan. This will include, but not be limited to, the need to modify the SPAM unit, to expand SPAM treatment capacity, or to treat different types of explosives or ordnance, etc.

New information is obtained that significantly changes the underlying assumptions or procedures outlined in this Closure Plan.

Unexpected events occur during closure that requires significant modification of the Closure Plan.

Certain events and/or contingencies are anticipated in the Closure Plan and do not warrant formal amendment of this plan. For example, the need to extend the anticipated schedule of some closure activities by a few days (provided the overall time scheduled for closure is not exceeded). Such events and contingencies will be brought to the attention of the U.S. EPA or IDEM; however, formal amendment of the Closure Plan will not be requested.

Whenever events or contingencies requiring formal amendment of this Closure Plan occur, a written request for permit modification will be submitted to the IDEM. Such requests will be signed by the engineer responsible for CRANE oversight and sent by certified mail. Any requests for amendment will describe in detail the necessary Closure Plan changes.

## J. CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

#### J-1 Solid Waste Management Units

There is no additional information provided here relevant to the SPAM facility.

#### J-2 Releases

3

There is no additional information provided here relevant to the SPAM facility.

# K. OTHER FEDERAL LAWS

There is no additional information provided here relevant to the SPAM facility.

# L. PART B CERTIFICATION

This is contained in the introductory section for the entire Part B permit. A separate certification is not provided for each unit.

# APPENDIX 1

# CONTINGENCY PLAN

Revised August 2018

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# **APPENDIX 1: CONTINGENCY PLAN**

#### G. CONTINGENCY PLAN

The Contingency Plan is an evergreen document, always in use and continually updated. Accordingly, it is provided as a supplement to facilitate its update, as needed. The primary copy of the Contingency Plan and Emergency Procedures is kept in the CRANE Environmental Protection Office and the CRANE Fire Protection/Prevention Branch. A copy of the Contingency Plan is also kept at each hazardous waste (HW) facility listed in this plan.

## G-1 General Information:

The information contained in this Section is in full compliance with contingency requirements set forth in 40 Code of Federal Regulations (CFR) §270.14, 40 CFR §264.50 through 40 CFR §264.56, 40 CFR §264.171, 40 CFR §264.194(c), 40 CFR §264.227, 40 CFR §264.255.

#### G-1a(1) Central Storage Facility [CSF] (NSA Operated)

The CSF is the single destination for non-energetic hazardous/non-hazardous wastes to be stored at CRANE (for periods which may exceed 90 days), prior to being removed to an approved off-site RCRA permitted facility. At the CSF, hazardous wastes are stored:

- 1. Inside Building 2993 on the liquid storage areas;
- 2. In Building 3435 on the liquid storage areas, or;
- 3. Outside on the gravel lot known as the outside non-liquid storage area.

Hazardous wastes, generated at various locations at CRANE, are temporarily stored at satellite accumulation locations (storage time not exceeding 90 days), and then transported to the CSF.

The site plan for the CSF is provided as **Exhibit G-1**.

The CSF is completely enclosed by a six-foot high chain-link security fence. Building 2993 is a metalsided structure, approximately 40 feet wide by 72 feet and 8 inches long. The inside perimeter is completely enclosed by a six-inch high concrete curb. Concrete curbs and sumps have been constructed to separate waste storage areas and to prevent mixing of incompatible wastes. The Building 2993 floor is a concrete slab sloped toward the sumps. Building 2993 is equipped with explosive proof lighting and equipment, insulated walls and ceiling, a ventilation system, safety showers, eyewash station, a fire alarm system, and an explosion proof telephone for emergency use. A heating system is provided in a segregated room.

Building 3435 is a metal-sided structure constructed with six fiberglass overhead sectional doors and a four-foot, four-inch wide concrete apron. Building 2993 is used to store liquid wastes. **Exhibit G-1** shows the layout of this facility. The structure is approximately 14 feet, 8 inches wide by 72 feet, 8 inches long. The building floor is a concrete slab sloped toward a trench pump out area. Concrete curbs have been

constructed to separate waste storage areas and to prevent mixing of incompatible wastes. A dry chemical fire extinguishing system has been provided in case an emergency situation should arise.

<u>Central Storage Facility</u> – Building 2993, Building 3435 and the surrounding fenced-in area as detailed in **Exhibit G-1**.

- (A) Building 2993 An enclosed storage area for containers holding liquids located at the CSF;
- (B) <u>Building 3435</u> An open, curbed storage area for containers holding liquid at the CSF, located adjacent to Building 2993;
- (C) <u>Gravel Lot</u> An open storage area for containers of non-liquids at the CSF, located adjacent to Building 2993.

The principal emergency events that could occur at the CSF are a spill/leak or an unplanned/uncontrolled explosion or fire.

A spill/leak alone would not result in an explosion or fire because:

- All container integrity (i.e., good container condition, non-leaking container, etc.) is verified through regular inspection;
- All container to waste stored compatibility is verified through regular inspection;
- All containers are kept closed, except when adding or transferring wastes;
- All containers are managed to avoid rupture;
- Waste storage procedures have been developed to ensure that no mixing of incompatible wastes occur; and
- Berms or containment dikes separate all containers of incompatible waste.

In all cases the hazards from an uncontrolled/unplanned explosion would be limited to the CSF personnel through exposure to potential bodily injury or death. Off-site impacts would not occur as a result of unplanned/uncontrolled explosion at the CSF.

#### G-1a(2) Super Pull-Apart Machine [SPAM] (CAAA OPERATED)

The site plan for the SPAM is located at the end of this Attachment as **Exhibit G-2**. The Ammunition Peculiar Equipment 2271, Super Pull-Apart Machine (SPAM) is a two phase demilitarization process. The first phase involves disassembling munition items by separating the projectiles from the cartridge case. The second phase (treatment) involves the functioning of the active primer via a primer firing system. The SPAM disassembly line is configured to process 50 caliber, 20mm, 25mm, 30 mm and

40mm cartridges. The SPAM process is located in Building 146 - Bay 5, in the central portion of CRANE The major system components of the SPAM are:

- Line loading cell;
- Projectile cartridge case pull apart station;
- Propellant dump station;
- Primer firing system;
- Wet scrubber system;
- Dry filtration system;
- Propellant accumulation and palletizing facility;
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The principle emergency event that might occur at the SPAM is an unplanned/uncontrolled explosion or fire. A spark could ignite the propellant within the propellant recovery system resulting in a fire and/or explosion. In the unlikely event that such an explosion would occur, the impact would be limited to the equipment and the SPAM personnel and would not have off-site impacts.

# G-1a(3) Contained Detonation Chamber [CDC] (CAAA OPERATED)

The site plan for the CDC is provided as **Exhibit G-3**. The CDC is a process where the controlled detonation of munitions occurs in a detonation chamber. The CDC detonation chamber is a dual walled steel chamber (i.e., a box within a box). Each box of the detonation chamber is fabricated from high quality steel. Each of the boxes is constructed of welded-steel plates. The voids between the welded-steel walls of the dual boxes are filled with silica sand to dampen and absorb the detonation shock wave. The detonation chamber interior (e.g., ceiling, floors, access door, walls, and vent duct) is covered with 1 inch thick armor plating. Each section of armor plating is 12" by 12". This sectional armor plating allows for a greater engineered capacity to withstand detonation impacts. Additionally, this design allows for easy maintenance of the interior armor plating.

As shown on **Exhibit G-3**, the CDC is completely within Building 3339. Building 3339 contains the CDC primary detonation chamber, mechanical area, and control room. Building 3339 is of rigid frame and metal siding construction approximately 54 feet wide by 77 feet long. The inside concrete floor has a perimeter that is completely enclosed by a six-inch high concrete curb. The metal-paneled structure is erected on the six-inch high concrete curb.

The primary detonation chamber is constructed on a twelve-inch concrete pad with a 6-mil VISQUEEN vapor barrier between the concrete pad and the compacted subgrade. The remainder of the building floor

is six-inch concrete slab with a 6-mil VISQUEEN vapor barrier between the concrete pad and the compacted subgrade.

The interior walls of Building 3339 have been constructed to separate the Primary Detonation Chamber from the rest of the building.

Building 3339, Detonation Chamber, and the surrounding area as detailed in Exhibit G-3.

- (A) Building 3339 An enclosed area for daily staging of the waste being treated; and
- (B) <u>Detonation Chamber</u> An enclosed area where the controlled explosion of waste materials occurs.

The principal emergency event that might occur at the CDC is an unplanned/uncontrolled explosion or fire. Munitions awaiting treatment could detonate prior to being placed into the CDC chamber. Premature detonation of the donor charge could cause the unplanned detonation of the munitions in the detonation chamber. It is extremely unlikely that the CDC treatment residues or APCS residues would present a detonation/explosion hazards. In all cases the hazard would be limited to the CDC personnel through exposure to potential bodily injury or death. Off-site impacts would not occur as a result of unplanned/uncontrolled detonations.

G-1a(4) Ammunition Peculiar Equipment 1236 Incinerator [APE] (CAAA OPERATED) The Ammunition Peculiar Equipment 1236 (APE 1236) Incinerator is a rotary kiln system designed by Tooele Army Depot. The incinerator system consists of a waste feed system, several conveyors, a natural gas-fired rotary kiln, and air pollution control devices. Operating conditions are monitored at various points throughout the system utilizing temperature, flow rate, differential pressure, and fuel gas-composition measurement devices. The major system components of the APE 1236 Incinerator are:

- Rotary kiln feed system;
- Rotary kiln;
- Ambient air cooler;
- Cyclone;
- Afterburner;
- Baghouse;
- Induced draft (ID) fans; and;
- Continuous emission monitoring system (CEMS).

The kiln and the surrounding area as detailed in Exhibit G-4.

- (A) <u>Kiln</u> An enclosed area that house the rotary kiln in which the controlled explosion of waste materials occurs; and
- (B) Feed Room An enclosed area for daily staging of the waste being treated.

The principal emergency event that might occur at the APE 1236 Incinerator is an unplanned/uncontrolled explosion or fire. Munitions awaiting treatment could detonate prior to being placed on the APE 1236 Incinerator feed conveyor. Munitions placed on the APE 1236 Incinerator feed conveyor could detonate prior to entering the rotary kiln. It is extremely unlikely that the APE 1236 Incinerator treatment residues, air pollution control system (APCS) residues or kiln ash, or kiln metal residue would present a detonation/explosion hazard. In all cases the hazard would be limited to the APE 1236 Incinerator through

exposure to potential bodily injury or death. Off-site impacts would not occur as a result of unplanned/uncontrolled explosion or fire.

The rotary kiln could be damaged as a result of excessive energetic levels in some feed items resulting in explosions that could damage the APE 1236 Incinerator. Damage resulting from excessive energetic levels in feed items is not considered to be a significant possibility because prior to being fed to the rotary kiln, a safety evaluation is performed to determine the maximum feed rate for the material being fed. This maximum feed rate is then programmed into the computer controlled feed system that will automatically shut off the feed conveyor if this feed rate is exceeded.

The APCS could be damaged if an untreated energetic would pass through the APE 1236 Incinerator and explode in the APCS. However, this is unlikely because the rotary kiln operates at a minimum temperature of 1,200°F. It is extremely unlikely that any energetic material could survive this temperature in sufficient quantities to be an explosive hazard in the APCS. In the unlikely event that such an explosion would occur, the impact would be limited to the equipment and the APE 1236 Incinerator personnel and would not have off-site impacts.

A natural gas or fuel oil leak could be ignited resulting in a fire and/or explosion. In the unlikely event that such an explosion would occur, the impact would be limited to the equipment and the APE 1236 Incinerator personnel and would not have off-site impacts.

G-1a(5) Open Burning/Open Detonation Operations [ABG, ORR, DR] (CAAA Operated)

Open Burning (OB) in Containment Devices. The OB unit is located as shown in Exhibit G-5.

Waste military energetic materials are open burned in specially constructed burning pans. Routine open burning operations are not permitted to be conducted directly on the surface of the ground by Department of Defense internal regulations. Typically, bulk propellants or other energetic materials are poured into the burning pans to a few inches in depth, primed, and remotely initiated. Some all-up or component items are fed into a contained burn device on a continuing basis (i.e., the 13-ABG incendiary cage and 12-ABG primer pit). General descriptions of the types of OB operations and equipment used at the Ammunition Burning Grounds are listed in (A) through (K) of this section. The units/operations at the ABG which are being permitted as Hazardous Waste Treatment units are covered by paragraphs (A), (B), (D-G), and (J-K). The units described in paragraphs (C) and (H) are not considered hazardous waste treatment units, but are located within an area which is regulated as a TSD.

The two OB operations conducted at the Old Rifle Range are discussed in paragraph (M) of this section. A summary of OB operations conducted at the ABG and ORR is provided in <u>Table G-1</u>.

(A) Units 3a & 3b-ABG. Solid bulk propellant and explosives are open burned (thermally treated) in clay lined steel pans. There are twenty pans set up for this operation. The pans are 14' x 7' x 12" in depth and are constructed of 3/8" carbon steel. The pans have aluminum lids to be used when the pans are not in operation. The maximum net bulk propellant weight for each pan is 1,500 pounds while the maximum net bulk explosive is 500 pounds.

The average time taken for 1,500 pounds of bulk propellant to burn is 15 - 30 seconds, while 500 pounds of bulk explosive can take 4 - 60 minutes depending upon the type of explosive being burned.

These burns are witnessed by the area supervisor from the office at the ABG to verify completeness of the burn or any indications of problems with the burn. After all visible flames have subsided, the supervisor then enters the area and verifies that unsafe conditions do not exist. The operators then return to the unit and clean up ash and any pop out. Cleanup is accomplished using non-sparking hand tools such as brass shovels, wooden rakes, etc.

(B) Unit 3c-ABG. High explosive production scrap is thermally treated in two pans which are constructed identically to the ones used for bulk propellant. The maximum net explosive

weight permitted for each pan is 1,500 pounds of propellant scrap, and 500 pounds of high explosive scrap. The same procedure, which is outlined in subsection (A) above, is followed. Length of burn time varies from 4 minutes to 1 hour for this operation, due to the type of high explosive production scrap which is being burned.

- (C) One additional 14' x 7' pan is provided near the primer pit area for the purpose of inspection of treated components. This pan is used for inspection purposes only, not thermal treatment. Components which have been treated at the primer pit are placed in this pan and are visually inspected by the CAAA personnel to insure that all have functioned. These components, after they have been inspected, are then turned in to DRMO to be offered for sale as scrap metal.
- (D) Units 4 & 5-ABG. PEP contaminated solvents are burned in one unlined steel pan. This pan is 4' x 8' x 12" in depth and is constructed of 1/2" carbon steel. The maximum net explosive weight permitted to be treated at one time in this pan is 50 pounds for Unit 4-ABG and 100 pounds for Unit 5-ABG. Average length of time required for burn is 30 45 minutes. These burns are witnessed by the area supervisor from the office at the ABG to verify completeness of the burn or any indications of problems with the burn. After all visible flames have subsided, the supervisor then enters the area and verifies that unsafe conditions do not exist. The operators then return to the unit and clean up ash and any pop out. Cleanup is accomplished using non-sparking hand tools, such as brass shovels, wooden rakes, etc.

The waste ash generated by the burning of these waste solvents is collected and segregated from other ash streams at the ABG. This operation generates a very minimal amount of ash.

- (E) Unit 6-ABG. The waste Red Phosphorous and #2 fuel mixture is burned in unlined steel pans. Currently at the site, two sets of four pans are set up for this operation. These pans are 4' x 4' x 12" in depth and are elevated two to three feet off of the ground by metal stands. The pans are constructed of 1/2" carbon steel. The maximum net explosive weight permitted to be treated in these pans is 100 pounds per pan. The operator pulls the igniter which starts the time fuse on the pan and then exits the area and goes to the office at the ABG. Average length of time required for burn is two hours. These burns are witnessed by the area supervisor from the office at the ABG to verify completeness of burn or any indications of problems with burn. After all visible flames have subsided, the supervisor then enters the area and verifies that unsafe conditions do not exist. The operators return to the unit and clean up ash and any pop out. Cleanup is accomplished using non-sparking hand tools, such as brass shovels, wooden rakes, etc.
- (F) Unit 7-ABG. Waste scrap pyrotechnics, which are desensitized in #2 fuel oil, are burned in two unlined steel pans. Each pan is 4' x 8' x 12" in depth, constructed of 1/2" carbon steel. The maximum net explosive weight permitted to be treated in each pan is 100 pounds. Average length of burn is 30 - 45 minutes. These burns are witnessed by the area supervisor from the office of the ABG to verify completeness of the burn or any indications of problems with the burn. After all visible flames have subsided, the supervisor then enters the area and verifies that unsafe conditions do not exist. The operators return to the unit and clean up ash and any pop out. Cleanup is accomplished using non-sparking hand tools, such as brass shovels, wooden rakes, etc.
- (G) Unit 8-ABG. Scrap black powder, which is desensitized in water, is burned in one unlined steel pan. This pan is 4' x 8' x 12" in depth and is constructed of 1/2" carbon

steel. The maximum net explosive weight permitted to be treated at one time in this pan is 125 pounds. Average length of time required for a burn is 60 minutes.

- (H) Unit 9-ABG (non-regulated). Two 30' x 50' concrete burn pads have been provided for the flashing of, or thermal treatment of explosive contaminated and suspect explosive contaminated materials.
- (I) Units 10 & 11-ABG. CAAA operates three Dewatering Units (DU's) which have double walled underground tanks that are equipped with automatic leak detection. DU-1 and DU-2 make up 10-ABG, which treat PEP sludge. DU-3 is 11-ABG and treats red phosphorus sludge. The DU's receive explosive and pyrotechnic contaminated sludges from production operations at Building 146, Minefill A Area, the Rockeye area, and the Pyro-Production Building 133. The maximum amount of sludge that could be treated per week in the DU's is 15,400 pounds NEW.

Each tank rests on a reinforced concrete pad (each approximately 8'4" W x 15' L x 20" thick). The steel burning pans measure 8' x 14' x 6', with the sides being lined with 4 inches of concrete containment vessels measure 14' x 22' x 5'8" deep. Each sub-unit is equipped with a cover when the pan is not in use. The covers for the burn pans are constructed of fiberglass and urethane composite planks. The planks are additionally supplemented with tarps.

- (J) Unit 12-ABG. The primer pit operation involves treatment of small explosive components such as hand grenade fuses and cartridge primers. This operation consists of a small building (2126), two gravity feed chutes and two heavy steel pans with grated covers. The amounts of items which are to be fed in each increment are limited by explosive safety standards. The primer pit, when operated, runs for eight hours at a time.
- (K) Unit 13-ABG. The incendiary cage is set up primarily to allow the functioning of all-up pyrotechnic devices and components. Once mechanized conveyor runs from Building 3329 and ends over a caged burn box. The burn box is contained within a reinforced concrete structure that has three walls, a concrete floor and heavy steel frame which is covered with a fine stainless steel screen. The screening serves to contain burning embers, thereby reducing fire hazards.
- (M)Units 3a & 3b-ORR. The majority of the open burning activity which takes place at the ORR is thermal treatment of ammonium picrate (also known as Comp D, Composition D or Yellow D). Unit 3a-ORR represents the burning of bulk ammonium picrate in pans placed on the concrete pads of Unit 3a-ORR. Unit 3b-ORR represents the flashing of ammonium picrate-loaded projectile bodies and other ammonium picrate-contaminated materials. Some flashing of scrap metal retrieved from the adjacent demolition range also occurs at the ORR. The operation is conducted within 30' x 50' concrete burn pads. The concrete burn pads are 8" reinforced concrete sloped towards the center where a grated collection system directs any precipitation to a collection sump. The pads are surrounded by 6' tall chain link fencing and gates. In practice, the floor of these concrete pads is covered with six inches of sand to prevent the concrete floor from spalling due to intense heat of the burning operations. After inspection for complete removal of explosive contamination, the steel projectile bodies are excessed as scrap metal. Burn pans, identical to those used at the ABG, are used when treating bulk Comp D. Three pans are placed in each containment area. One pan contains a 4' x 8' smaller pan which is used to thermally treat liquids which have contacted ammonium picrate. Average length of time required for a burn is two hours for projectiles and 30 minutes for bulk Yellow D. Most of the time, these units will be used for treatment of Composition D items. However, there is the possibility that some of the materials normally burned at ABG might be treated in Unit 3a-ORR. If the ABG is not available for treatment operations, then ORR

would be used to in the interim to treat some PEP wastes until the ABG is operational. The procedures used at ABG would be followed in the event that operations might be conducted in Unit 3a-ORR.

<u>Open Detonation Operations at the Demolition Range</u>. CRANE currently conducts detonation of munitions, deteriorated compressed gas cylinders, suspect inert items, and lithium batteries. Minor detonation of items, such as lithium batteries, suspect inert items, and deteriorated compressed gas cylinders with unknown contents, is done on the surface, not buried. Static firing operations at times are also conducted at the DR. Examples of items that could be static fired would be Bullpup Rocket Motors and gas generators. A summary of OD operations conducted at the DR is provided in <u>Table G-1</u>. The OD/ORR unit is located as shown in <u>Exhibit G-6</u>.

Ammunition or explosives which are to be destroyed by detonation are usually placed in pits 0 - 9 feet deep. The depth of a hole is based on encasement of the munitions item and fragmentation range. Items are placed in these pits in a position that exposes the largest surface area to the influence of the initiating explosive charge. An adequate number of detonating blocks are placed in intimate contact with the items to be detonated.

The detonating blocks are primed, and the pits are covered with 0 - 9 feet of earth. The earthen cover provides a muffling of the sound, blast effects, and reduction of fragmentation. Detonation is performed remotely using dual non-electrical initiation devices.

The existing OD unit consists of 70 sub-units (pits). The demolition range where these pits are located is approximately 2,500 feet in length and 1,000 feet in width. Each pit measures approximately 12' (width) x 12' (length) x 10' (diameter). The materials to be detonated are typically palletized (unitized), materials packed into open top drums, banded to pallets and placed into the pits by use of all-terrain forklifts. The lid is placed back on the drum after it is packed with the item to be detonated.

The quantities of explosives detonated per pit vary depending on atmospheric conditions and the explosive item being treated. Generally, 500 pounds per pit are detonated between late spring and early fall, and 250 pounds per pit are detonated between early fall and late spring. During peak operational summer months, a minimum of nine feet of earthen cover is required to provide adequate noise attenuation. Once the range has been loaded, the area supervisor assures that all personnel have been cleared from the range. The supervisor and one other employee remain to initiate the time fuses. All personnel assemble at a safe distance and independently count the number of detonations. After detonations, the supervisor tours the range to assure that all units have fired and that no unsafe conditions have resulted.

# G-2 Emergency Coordinators

For the purposes of this plan, the Emergency Coordinator (EC) will hereinafter be referred to as the On-Scene Commander (OSC). Individuals that can serve as the primary/alternative OSC to coordinate all emergency response measures at CRANE are identified in Table G-2. The OSC will coordinate efforts with Emergency Operations Center (EOC), and will remain in charge until the emergency situation has been mitigated. Once any immediate threat to human health is eliminated, the OSC may transfer command to Environmental Protection if cleanup operations are necessary.

Each person listed as a qualified OSC will be thoroughly familiar with this plan, the operations and activities, location and characteristics of waste handled, location of all records, and layout for each unit

listed in this Plan. Further, each person has the authority to commit the resources required to implement this plan.

#### G-2b Emergency Spill Response Team

The regular members of the Spill Response Team include the following:

## (1) CRANE Fire Department personnel

If necessary, CRANE Environmental Protection personnel, Public Works shop personnel, Explosive Ordnance Disposal (EOD) Detachment, the CRANE Medical Department, Industrial Hygiene and Security will be notified for additional assistance. Such assistance would be consistent with their regular duties. CRANE's Disaster Preparedness Plan addresses the duties of the above groups in the event of a major incident.

#### G-2c Authorization Statement

Authority for all aspects of this Emergency Response Plan is given by the CRANE Officer in Charge to the OSC. Specifically, this instruction states that the OSC will have the authority during an emergency situation to use the necessary resources and manpower to protect human health and the environment.

In the event of a fire, the OSC will remain in charge until the fire is controlled and any spill has been contained. Once the fire is controlled and any spill has been mitigated, the OSC may transfer command to Environmental Protection for spill cleanup operations.

In the event of an explosion, the EOD Detachment will be called-in to mitigate the situation. The OSC will remain in command until any immediate threat to human health and the environment is eliminated, and spill cleanup operations are ready to commence.

In situations where the OSC has assessed that a release, fire, or explosion which may threaten human health and the environment outside of the facility has occurred, the EOC must be notified immediately. Outside officials will then be notified of the possible threat. If a spill cleanup contractor is to be called in, the CRANE Officer in Charge/Senior Civilian/Public Works Officer should be notified and advised of the decision, and then a contractor should be contacted. If the Officer in Charge, Senior Civilian, or the Public Works Officer is not available, the OSC will proceed with contacting and requesting the services of a contractor.

#### G-3 Implementation

In response to a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to the air, soil, or surface water at any facility listed in this plan that are beyond the scope of normal operations and capabilities of facility personnel, facility personnel will sound the internal alarm system, and phone Security if possible, before exiting the facility. Personnel will remain outside of the building until the emergency situation has been mitigated and have been informed that it is safe to re-enter the facility.

If the OSC determines that the there is an imminent or actual emergency situation at the facility, the emergency actions listed in Section G-4 will be implemented.

## G-4 Emergency Actions:

#### G-4a Notification

If an imminent or an actual emergency should occur, the OSC will immediately: Activate or cause to be activated internal alarms and/or communications systems in order to notify all facility personnel and

appropriate emergency response activities at CRANE; and notify or cause to be notified State or local agencies (as needed), to request assistance.

#### G-4b Identification of Hazardous Materials

If there is a release, fire or explosion, the OSC will immediately identify its character, exact source, amount and aerial extent, to the extent possible, of any released materials.

The OSC may be able to identify any released material based on observation or review of facility records or manifests, and if necessary, by chemical analysis. Environmental Protection should be notified to help identify the released materials. Environmental Protection has data files of processes and storage areas involving hazardous waste and materials for each facility. These facility records will provide assistance in determining the exact source of the spill, and identification of any released material being used and/or generated at each facility. Samples may be taken to verify the identity of the released material. If analyzed, results could be received back in 24 hours (if on-center testing is used), or in 48 hours (if off-center testing is used).

A member of the CRANE's Emergency Response Team will be dispatched by the OSC to determine or verify the reported volume of the released material, as well as to investigate the cause of the release, through observation and discussions with key personnel in the area. If a release occurs locally during transit of a hazardous waste or material, logs or manifest and label information will provide data on the identity, volume and source of the release.

#### G-4c Assessment

Concurrently, while identifying the character, exact source and aerial extent of any released materials, the OSC will assess possible hazards to human health and the environment due to the emergency incident. The assessment should address:

- (1) Direct and indirect results from the release, fire or explosion;
- (2) Effects of any toxic, irritating or asphyxiating gases that are generated; and
- (3) Effects of any hazardous surface water run-off from water or chemical agents used to control fire and heat-induced explosions.

The CRANE Officer in Charge and Senior Civilian, along with representatives from the EOD Detachment, Public Works, CRANE Industrial Hygiene, Safety, Environmental Protection, etc., will be

called in to help in making the hazards assessment. After hours these personnel can be contacted using the Technical Support Personnel Recall List found in <u>Table G-2</u>.

The following resources would be reviewed by the aforementioned group to complete the hazard assessment:

- (1) Material Safety Data Sheets (MSDS) for material(s) involved in incidents, to determine decomposition by-products;
- (2) Chemical reference documents such as Sax Dangerous Properties of Industrial Materials, Condensed Chemical Dictionary, Lange's Handbook of Chemistry, Emergency Handling of Hazardous Material; and
- (3) Waste profiling data and/or analytical data that is available for any material released.

The assessment would also evaluate means of egress and direction of any release or gas/smoke cloud, which may leave the facility to determine which areas would have to be evacuated.

If after reviewing the situation the OSC determines that a release (spill, fire or explosion) has occurred which could threaten human health, or the environment outside CRANE boundaries, he must report his findings as follows:

- (1) If his assessment indicates that evacuation of local areas may be advisable, he must immediately notify the appropriate local authorities. He must be available to help the appropriate officials decide whether local areas should be evacuated; and
- (2) He must immediately notify either the government official designated as the on-scene coordinator for the geographical area (in the applicable regional contingency plan under 40 CFR Part 300), or the National Response Center [24-hour emergency number (800) 424-8802]. The report must include:
  - (A) Name and telephone number of reporter;
  - (B) Name and address of facility;
  - (C) Time and type of incident;
  - (D) Name and quantity of material(s) involved, to the extent known;
  - (E) The extent of injuries; and
  - (F) The possible hazards to human health or the environment outside of the facility.

The following State and Local agencies/individuals must also be notified of the emergency situation:

- (1) IDEM Office of Environmental Response (24-hour number): (800) 233-7745.
- (2) Martin County Sheriff's Department: (812) 247-3726
- (3) Martin County Local Emergency Planning Commission (812) 854-2429 or (812) 482-2232 (after hours POC currently: Mr. Andy Ringwald, (812) 295-3901 or Mr. Cameron Wolf, (812) 295-2142, respectively).

If areas outside CRANE must be evacuated, and traffic rerouted, the state/local police will be advised of such by the OSC, as well as the nature of the hazard(s) involved. A local hospital (Bloomington, Linton, Vincennes, Jasper, Washington or Bedford) will likewise be advised by CRANE's medical staff of any

related injuries resulting in transportation of injured parties to the hospital for treatment. The key telephone numbers for emergency response are found in <u>Table G-3</u>.

#### G-4d Control Procedures

The OSC will take all measures necessary to contain the incident within the affected area, and will notify the appropriate personnel listed in this plan. Descriptions of control and containment procedures of some potential incidents are as follows:

- (1) <u>Explosion:</u> In the event of an unplanned explosion, operation of the affected facility will be ceased immediately and the Fire Department and EOD Detachment will be notified of the incident. Operation will not resume until the cause of the explosion has been determined, all necessary repairs, if any, have been completed, and approval to resume operations has been obtained.
- (2) <u>Fire:</u> In the event of a unplanned fire, the Fire Department and the OSC will be notified immediately. The Senior Fire Officer will be considered OSC until the fire is brought under control and any releases have been contained. Once the fire has been mitigated and no immediate threat to human health exists, the OSC may transfer authority for cleanup of the area to Environmental Protection. At the discretion of the OSC, non-essential personnel may be evacuated from the immediate area. No operations will be resumed until inspection and approval is obtained from the OSC.
- (3) <u>Spill:</u> A release of hazardous waste during transportation, at any of the facilities listed in this Contingency Plan, could occur. However, due to hazardous waste handling & transportation procedures, posted speed limits, and safety precautions, a release is unlikely to occur. If a release should occur, the following procedure would be initiated:
  - (A) Notification of the CRANE Fire Department or Security;
  - (B) Assessment of the extent of surface contamination to determine if an emergency situation exists.
    - If the hazardous wastes are in solid form and do not migrate after the initial release, the wastes would be cleaned up, and the OSC would submit a report documenting the event and cleanup measures the next day. The operation would not restart until the OSC has determined that the release has been properly cleaned and has given approval for restart of operation.
    - In the event that the materials released were liquids, and upon direction of the OSC, the Contingency Plan would be implemented.
  - (C) The Emergency Response Team and other necessary activities would be notified by the OSC;
  - (D) Containment of the release by using available emergency equipment;
  - (E) Definition of the area of the release;
  - (F) The OSC will assess the imminent threat to human health and the environment;
  - (G) Direct read and personal air monitoring measurements will be conducted by CRANE Industrial Hygiene personnel as needed and/or upon request. The area will be cleaned of all hazardous materials/wastes using appropriate emergency equipment. Water

samples and soil samples will be obtained and analyzed. The material will be properly collected in DOT approved containers and labeled as to the contents;

- (H) All equipment used in the cleanup will properly decontaminated and serviced. Any residue from the decontamination process will be properly collected in DOT approved containers and labeled as to the contents;
- (I) The area in which the release occurred will be certified clean by the OSC; and
- (J) Determination will be made regarding what caused the release and what steps should be taken to prevent a recurrence.
- (4) <u>Major Malfunction of Process Equipment:</u> If the major malfunction of process equipment results in an emergency situation that item would immediately be shut down (if safe to do so) according to Standard Operating Procedures, and the OSC would be notified. If no threat to human health or the environment exists, and if there is otherwise no reason to remain in a shut down condition, the proper craftsmen would be notified, and remedial action would begin. Operation of the item would not resume until certified safe by the OSC and the Safety Department. Examples of equipment malfunctions could include leaking pumps, ruptured pipes, leaking tanks, etc. If this potential emergency situation should occur, the OSC would monitor for leaks, pressure buildup, gas generation, or ruptures in equipment whenever appropriate.
  - <u>Severe Weather Conditions:</u> Occasional severe weather may threaten safe operation. If severe weather should occur, waste-handling operations would be discontinued in accordance with Standard Operating Procedures.

#### G-4e Prevention of Recurrence or Spread of Fires, Explosions or Releases

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

The follow-up actions for the OSC are:

- (1) To investigate the cause of the emergency and submit a formal report to Command within 48 hours;
- (2) To submit fire and accident reports;
- (3) To ensure that proper restoration actions are instituted as soon as possible after decontamination and cleanup procedures have been submitted;
- (4) To ensure that equipment repaired or replaced as a result of an incident is recertified, as necessary, prior to being placed in service;
- (5) Within 15 days, to notify the Naval Facilities Engineering Command, the Naval Sea System Command, as well as the Commissioner of the IDEM and the EPA Regional Administrator (see Section G-8 for report content); and
- (6) To notify the Commissioner of IDEM and appropriate local authorities that the facility is in compliance with 40 CFR 264.56 before operations resume in the affected area(s) of the facility.

Immediately after an emergency, the OSC will coordinate with Environmental Protection to provide for the collection, storage, treatment and disposal of recovered waste, contaminated soil and any other material that results from the incident. This waste will be handled as hazardous waste until a chemical analysis can be obtained that proves otherwise. Spill residue will be placed in compatible containers and stored in the CSF. Any hazardous waste from emergency situations requiring disposal will be sent to an

off-site RCRA permitted TSD facility. In the case of explosive waste and explosive contaminated materials, it would be sent to the ABG or DR for treatment.

Waste from emergency situations will be disposed in accordance with all applicable solid waste regulations. Spill residues of listed wastes (see **Exhibit F-11**) will be handled as hazardous waste.

## G-4f Storage and Treatment of Released Materials

Immediately after an emergency, the OSC will coordinate with Environmental Protection to provide for the collection, storage, disposal and/or treatment of recovered wastes, contaminated soil or surface water, or other material resulting from the emergency incident. To the extent possible, collected materials will be placed in compatible containers and either stored at the CSF or less than 90-day accumulation site, as appropriate, or treated at one of the permitted HW treatment facilities at CRANE. <u>Exhibit G-15</u> contains a listing of representative waste and hazardous waste constituents stored at the CSF.

#### G-4g Incompatible Waste

In case of an emergency incident, which results in the recovery of wastes, contaminated soil or surface water, or decontamination material, the collected materials will be stored, treated or disposed of with respect to compatibility. Two or more wastes are said to be compatible when their characteristics are such that a quantity of 2 or more of the items stored together is no more hazardous than a comparable quantity of any one of the items stored alone. See **Exhibit F-11** for guidelines that could be used in determining potentially incompatible waste materials or components.

The OSC will coordinate with Environmental Protection to insure that incompatible wastes are not mixed.

## G-4h Post-Emergency Equipment Maintenance

**Exhibit G-8** lists emergency equipment available at CRANE for response to incidents at the HW facilities listed in this plan. Any emergency equipment used in response to an incident covered by this Contingency Plan will be cleaned and certified for its intended use by the OSC before normal operations are resumed. This will be accomplished by:

(1) All emergency equipment and PPE used during a response will be properly decontaminated. Personnel cleaning respirators and breathing apparatus should follow manufacturer instructions. After the equipment (respirators, etc.) has been decontaminated, the equipment will be visually inspected for any defects before being put back into use. If any defects in respiratory equipment are identified, the user should return the equipment to the Respiratory Protection Program Manager for replacement;

- (2) Having all boots, coats, etc., decontaminated and inspected for wear and damage;
- (3) Having all rubber gloves, Tyveks, etc., collected and handled as hazardous waste; and
- (4) Having pumps, shovels, lifting mechanisms and other equipment decontaminated and inspected by Safety and the OSC, then put back into service.

## G-4i Container Spills and Leakage

## G-4i(1) CSF Spills and Leakage

Container management procedures have been implemented that make it unlikely for a spill or leak to occur. Prior to the start-up of operations, daily inspections will be performed to detect leaking containers in the CSF. Containers will be inspected for any signs of damage, corrosion, expansion, and leakage.

Only containers in good condition and properly packaged are accepted for storage at the CSF. However, if evidence of a leaking container is detected, the following actions will be taken:

(1) Once the action can be completed safely, stop the leak by placing the container so the hole or leaking area is pointed up. Then spread absorbent or other appropriate

neutralizer materials around the affected area to stop the spilled liquids from spreading; and

(2) Select a compatible container to overpack or transfer the leaking material into. This information is based on the waste characteristic information and MSDS.

The basic cleanup methodology that would be used for the spill of liquid or solid hazardous waste at the CSF would be:

- (1) Containment using absorbent or absorbent pads;
- (2) Cleanup of spilled residue and repackaging of leaking containers into a compatible container;
- (3) Decontamination and neutralization of the area where the spill occurred. In some cases soap and water, and caustic soda may be used to decontaminate the spill area; and
- (4) Certification that the area is clean and can be used again.

The concrete floor inside B-2993 and B-3435 has been sealed. In no circumstances will spilled material pass thru the containment liner or the sealant into the concrete. Thus, decontamination of sumps, floors and walls would consist of:

- (1) Containment;
- (2) Decontamination/neutralization (The area of spill cannot be used for storage until this is accomplished);
- (3) Clean the floor (sweep down, mop with soap and water or remove surface); and
- (4) Any contaminated materials that cannot be decontaminated will be removed and disposed of as hazardous waste.

In response to an unplanned/uncontrolled fire, or explosion at the CSF, personnel will sound the internal alarm system, and phone Security if possible, before exiting the facility. Personnel will not attempt to reenter the facility until the emergency situation has been mitigated.

#### G-4i(2) SPAM Container Spills and Leakage

All of the wastes treated are solids and no liquid treatment residues are generated.

If the leaking of fuel oil is identified, the following actions will be taken:

- (1) Place a container or absorbent material so that any leaking fuel oil is contained. Then spread absorbent or other appropriate neutralizer materials around the affected area to stop the spilled liquids from spreading; and
- (2) Select a compatible container to collect the contaminated material. This information is based on the waste characteristic information and MSDS.

The basic cleanup methodology that would be used for the spill of liquid or solid hazardous waste at the SPAM would be:

- (1) Containment using absorbent or absorbent pads;
- (2) Cleanup of spilled residue place into a compatible container;
- (3) Decontamination and neutralization of the area where the spill occurred. In some cases soap and water, and caustic soda may be used to decontaminate the spill area;
- (4) Certification that the area is clean and can be used again; and
- (5) Contact Environmental Protection for collection of the contaminated material.

In response to an unplanned/uncontrolled fire, or explosion at the SPAM, personnel will sound the internal alarm system, and phone Security if possible, before exiting the facility. Personnel will not attempt to re-enter the facility until the emergency situation has been mitigated.

# G-4i(3) CDC Container Spills and Leakage

Munitions items will be treated in the CDC, liquid wastes will not be treated at this facility. The principle emergency event that might occur at the CDC is an unplanned/uncontrolled explosion or fire.

In response to an unplanned/uncontrolled fire, or explosion at the CDC, personnel will sound the internal alarm system, and phone Security if possible, before exiting the facility. Personnel will not attempt to reenter the facility until the emergency situation has been mitigated.

# G-4i(4) APE 1236 Container Spills and Leakage

Munitions items will be treated in the APE 1236, any events resulting from the releases of liquids are of concern only for the fuel oil used to provide heat for ignition of the ammunition. All of the wastes treated are solids and no liquid treatment residues are generated.

If the leaking of fuel oil is identified, the following actions will be taken:

- (1) Place a container or absorbent material so that any leaking fuel oil is contained. Then spread absorbent or other appropriate neutralizer materials around the affected area to stop the spilled liquids from spreading; and
- (2) Select a compatible container to collect the contaminated material. This information is based on the waste characteristic information and MSDS.

The basic cleanup methodology that would be used for the spill of liquid or solid hazardous waste at the APE 1236 would be:

- (1) Containment using absorbent or absorbent pads;
- (2) Cleanup of spilled residue place into a compatible container;
- (3) Decontamination and neutralization of the area where the spill occurred. In some cases soap and water, and caustic soda may be used to decontaminate the spill area;
- (4) Certification that the area is clean and can be used again; and
- (5) Contact Environmental Protection for collection of the contaminated material.

In response to an unplanned/uncontrolled fire, or explosion at the APE 1236, personnel will sound the internal alarm system, and phone Security if possible, before exiting the facility. Personnel will not attempt to re-enter the facility until the emergency situation has been mitigated.

# G-4i(5) ABG Spills and Leakage

Container management procedures have been implemented that make it unlikely for a spill or leak to occur. However, if evidence of a leaking container is detected, the following actions will be taken:

(1) Once the action can be completed safely, stop the leak by placing the container so the hole or leaking area is pointed up. Then spread absorbent or other appropriate

neutralizer materials around the affected area to stop the spilled liquids from spreading; and

(2) Select a compatible container to overpack or transfer the leaking material into (if necessary) before treatment.

The basic cleanup methodology that would be used for the spill of liquid or solid hazardous waste at the ABG would be:

- (1) Containment using absorbent or absorbent pads;
- (2) Cleanup of spilled residue place into a compatible container or treatment unit;
- (3) Decontamination and neutralization of the area where the spill occurred. In some cases soap and water, and caustic soda may be used to decontaminate the spill area;
- (4) Certification that the area is clean and can be used again; and
- (5) Contact Environmental Protection for collection of any contaminated material (if necessary).

In response to an unplanned/uncontrolled fire, or explosion at the ABG, personnel will sound the internal alarm system, and phone Security if possible, and evacuate the area. Personnel will not attempt to re-enter the area until the emergency situation has been mitigated.

#### G-4i(6) ORR Spills and Leakage

Container management procedures have been implemented that make it unlikely for a spill or leak to occur. However, if evidence of a leaking container is detected, the following actions will be taken:

(1) Once the action can be completed safely, stop the leak by placing the container so the hole or leaking area is pointed up. Then spread absorbent or other appropriate

neutralizer materials around the affected area to stop the spilled liquids from spreading; and

(2) Select a compatible container to overpack or transfer the leaking material into (if necessary) before treatment.

The basic cleanup methodology that would be used for the spill of liquid or solid hazardous waste at the ORR would be:

- (1) Containment using absorbent or absorbent pads;
- (2) Cleanup of spilled residue place into a compatible container or treatment unit;
- (3) Decontamination and neutralization of the area where the spill occurred. In some cases soap and water, and caustic soda may be used to decontaminate the spill area;
- (4) Certification that the area is clean and can be used again; and
- (5) Contact Environmental Protection for collection of any contaminated material (if necessary).

In response to an unplanned/uncontrolled fire, or explosion at the ORR, personnel will sound the internal alarm system, and phone Security if possible, and evacuate the area. Personnel will not attempt to re-enter the area until the emergency situation has been mitigated.

# G-4i(7) DR Spills and Leakage

Munitions items will be treated at the DR, liquid wastes will not be treated at this facility. The principal emergency event that might occur at the DR is an unplanned/uncontrolled explosion or fire.

In response to an unplanned/uncontrolled fire, or explosion at the DR, personnel will sound the internal alarm system, and phone Security if possible, and evacuate the area. Personnel will not attempt to re-enter the area until the emergency situation has been mitigated.

## G-5 Emergency Equipment

**Exhibit G-8** lists emergency equipment available at CRANE for emergency response. All emergency response equipment will be maintained by the CRANE Fire Department. Any emergency equipment used in response to an incident covered by this Contingency Plan will be cleaned and certified fit for its intended use by the OSC before normal operations are resumed.

#### G-6 Coordination Agreement

Mutual aid agreements entitled, "Mutual Aid Fire-Fighting Assistance Agreement," have been established between CRANE and the following Indiana organizations:

- (1) Martin County Civil Defense, Fire and Rescue;
- (2) CRANE Volunteer Fire Department;
- (3) Indiana Division of Forestry;
- (4) Richland-Taylor Township Volunteer Fire Department;
- (5) Perry Township Volunteer Fire Department;
- (6) Loogootee Volunteer Fire Department;
- (7) Odon Volunteer Fire Department; and
- (8) Owensburg Fire Fighters, Inc.

Documented agreements, arrangements, letters to hospitals, and responses are found in **Exhibit G-14**.

CRANE has a verbal agreement with the Indiana State Police. They have agreed to set up roadblocks around CRANE, upon request, in the case of an emergency, such as a bank robbery, disaster (natural or man made) or hostage situation. They have also agreed to send their emergency response team in the case of a riot, hostage situation or violent demonstration. (This response will be made upon a request from the Commanding Officer through the Governor of Indiana).

A copy of this Contingency Plan has been provided to each of the following organizations/hospitals:

- (1) Martin County Sheriff's Department;
- (2) Greene County General (Linton, Indiana);
- (3) Bedford Medical Center (Bedford, Indiana);
- (4) Bloomington Hospital (Bloomington, Indiana);
- (5) Daviess County Hospital (Washington, Indiana);
- (6) Memorial Hospital and health Center (Jasper, Indiana); and
- (7) Dunn Memorial Hospital and Health Care Center (Bedford, Indiana).

At the present time, CRANE does not have agreements with any specific contractor(s) for the cleanup of spills. **Exhibit G-9** is a list that could be used to locate or hire a cleanup contractor.

#### G-7 Evacuation Plan

CRANE does not anticipate that any incident connected with the HW facilities addressed in the Permit would require extensive evacuation. The HW facilities are located in remote areas of CRANE, away from

areas of dense personnel concentrations. If a fire, explosion, or fugitive emission occurs at any of the facilities, personnel would evacuate only the immediate vicinity of the incident.

The internal communication and alarm system that is used to make facility operators aware of any situation requiring evacuation of facilities is dictated by the incident.

# G-7a Central Storage Facility

Both Building 2993 and Building 3435 are less than 75 feet long, with exits at both ends. A voice notification would be used during a release of chemicals while the facility is occupied.

If the incident involves fire that is determined uncontrollable by a fire extinguisher, the manual alarm will be pulled or the automatic alarm will be activated by the heat. These alarm switches are on the inside, near the doors at both ends of Building 2993. When the fire alarms are engaged, the Fire and Safety Department will automatically receive immediate notification.

Another means of communication are the two-way radios in waste transport vehicles. In addition, a telephone is located outside of Building 2993, and cell phones are carried by CSF personnel.

The CSF can be evacuated through its large overhead doors or personnel entry doors found on each end of the building. The personnel entrances are equipped with panic hardware. Due to the layout of the area, when personnel leave building 2993 through the southeast doors, they must pass by the building to get to the gates in the fence. The two gates are the only ways to exit the CSF lot.

The primary evacuation route would be most frequently used unless wind was blowing a smoke cloud over the road. In most instances, vehicles are parked at one of the two doors. Personnel evacuating the building and area would use these.

Situations that would warrant partial or complete evacuation are as follows:

- (1) Explosions resulting in airborne debris, including container fragments and hazardous waste;
- (2) Spills or chemical reactions resulting in toxic fumes;
- (3) Fire, when it cannot be contained and is spreading to other parts of the facility, or when it could generate toxic fumes; or
- (4) All incidents where necessary protective equipment is not available to emergency response personnel.

The evacuation plan will be discussed with each employee that is authorized to enter the CSF.

The main routes for exiting the CSF would include going east on Highway 45 to the Bloomington gate or west on Highway 45 to the Crane gate. An illustration of evacuation routes, along with additional information, is provided in <u>Exhibit G-10</u>.

#### G-7b Super Pull Apart Machine

The main routes for exiting the SPAM would include utilizing any of the east or west exit doors then going north from the building.

An illustration of evacuation routes from the SPAM is provided in Exhibit G-11.

#### G-7c Ammunition Peculiar Equipment 1236 Incinerator

The main route for exiting the APE 1236 Incinerator feed room would include utilizing the east exit door then going south from the unit and then going west towards Building 69 or utilizing the south exit door then turning west towards Building 69.

Exit routes from the process area north of the afterburner would include going north towards the railroad track then going west past the boundary of the APE 1236 Incinerator process area followed by going south towards Building 69.

Exit routes from the process area south of the afterburner would include going south past the boundary of the APE 1236 Incinerator process area followed by going west towards Building 69.

An illustration of evacuation routes from the APE 1236 Incinerator is provided in Exhibit G-12.

#### G-7d Contained Detonation Chamber

The three main routes for exiting the CDC Building 3339 would be utilizing:

- Either one of the south exit doors then going west from the unit towards the roadway,
- The west exit door then continuing west to the roadway, or
- The north exit door then turning west going towards the roadway.

Exit routes from the process area east of Building 3339 would include going east then going north and past the boundary of the CDC process area and then turning west towards the roadway.

Exit routes from the process area north of Building 3339 would include going north past the boundary of the CDC process area and then turning west towards the roadway.

An illustration of evacuation routes from the CDC is provided in **Exhibit G-13**.

#### G-7e OB/OD Facilities (ABG/ORR/DR)

CRANE does not anticipate that an emergency situation would occur that requires extensive evacuation, however if an unplanned fire, explosion, or fugitive emissions occurs, personnel would evacuate only the immediate area of the incident, if determined necessary.

The internal communication and alarm system that is used to make facility operators aware of any situation requiring evacuation of facilities is dictated by the incident.

When burning is conducted in the high explosive and propellant burn pans at the ABG, all personnel are required to move to a safe zone which, at the ABG is considered the office building, until the burn is complete and a determination is made by the Supervisor that it is safe to enter the area.

When burning is conducted in the units at the ORR, all personnel are required to move to a safe zone. At the ORR, this safe area is the DR. No personnel can enter the ORR until the burn is complete and a determination is made by the Supervisor that it is safe to enter the area.

When detonating at the DR, all personnel are required to move to a safe zone. At the DR, this is the lunch and locker building for the area. No personnel can enter the DR until the detonation is complete and a determination is made by the Supervisor that it is safe to enter the area.

The Standard Operation Procedure (SOP) for open burning and detonation prescribe the actions to be taken in case of emergencies and evacuation procedures.

#### G-8 Required Reports

The OSC will note in the operating record the time, date, and details of any incident that requires implementation of the contingency plan. Within 15 fifteen days after the incident, the OSC must submit,

in a written report, the incident to the IDEM and the EPA Regional Administrator. This report must include:

- (1) Name, address and telephone number of the owner or operator;
- (2) Name, address and telephone number of the facility;
- (3) Date, time and type of incident;
- (4) Name and quantity of material(s) involved;
- (5) The extent of injuries, if any;
- (6) An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
- (7) Estimated quantity and disposition of recovered material that resulted from the incident.

# G-9 Amendments to the Contingency Plan

Copies of the contingency plans are kept on file in the Environmental Protection Office (Building 3260) and the CRANE Fire Department. The Environmental Protection and CRANE Fire Department will be responsible for preparing and updating contingency plans. Copies of revised and new contingency plans are submitted to the IDEM and EPA for review and approval as required by the regulations.

The Contingency Plan will be reviewed and immediately amended, if necessary, whenever:

- (1) The facility RCRA Hazardous Waste Management permit is revised;
- (2) The plan fails in an emergency;
- (3) The design of a HW facility changes, 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 in the response necessary in an emergency; or
- (4) The list of emergency equipment changes.

# Table C-2

Hazardous Waste Stored at the CSF

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TABLE C-2 HAZARDOUS WASTE STORED AT THE CSF NSWC CRANE, CRANE, INDIANA ¥

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WASTE	HAZARDOUS CONSTITUENT	HAZARDOUS WASTE #
Acids. Waste	Acetic Acid	D002/D005/D006/D009/D011
	Fluoboric Acid	
	Hydrochloric Acid	
	Nitric Acid	
	Chromium	D007
	Lead	D008
	Selenium	D010
	Phosphoric Acid	P058
	Sodium Acid Sulfate	P041
	Fluoroacetic Acid	P115
	DPN Phosphate	
-	Thallium sulfate	
Aerosols Off-spec and	Rutane	D001
defective can (propellants)	Propane	DUUT
Bases waste including coustic	Ammonium Hydroxide	1002
aloonore	Sodium Hydroxide	1002
cleaners	Land	5009
	Chromium	D008
Cuentido Deseriros vuesto	Determine This avanate	D007
Cyanide Bearing waste	Potassium i mocyanate	D002/D003/F000/
including some plating wastes	Sodium Hydroxide	F007/F008/F009
	Sodium Cyanide	D001/D000
Decontamination Agent	Ethylene Glycol	D001/D002
(Caustic)	Monoethyl Ether	
	Sodium Hydroxide	
*Grit Blast Residue (Dust	Cadmium	D006
particles removed from air in	Chromium	D007
abrasive sand/grit blast	Lead	D008
operations removing paint)		
*Incineration, Demil Ash,	Chromium	D007
Residue Ash (including APE	Lead	D008
1236 Baghouse and Cyclone	Mercury	D009
residues)	Haxachloroethane	D034
*Ash from open burning / open	Cadmium	D006
detonation operations	Chromium	D007
	Lead	D008
Halogenated solvents, spent	Dichloroethane	F001/F002/
including degreasers and	Methylene Chloride	D040/D028/
coolants	1,1,1-Trichloroethane	D039
	Trichloroethylene (TCE)	
	1,1,2-Trichloro-1,2,2-	
	Trifluoroethane	
	Tetrachloroethylene	
*Metallic salt contaminated	Arsenic	D002/D004/
waste	Barium	D005/D006/
	Cadmium	D007/D008/
	Chromium	D009/D010/
	Lead	D011/D035
	Mercury	D039
		- · · · · · · · · · · · · · · · · · · ·
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	Selenium	
	Silver	
	Methyl Ethyl Ketone	
	Tetrachloroethylene	
Non-halogenated solvents,	Acetone	D001/F003/
spent and off-spec, including	Ethanol	F005/U154/
mineral spirits (petroleum	Chloroform	U220/U002/
distillates), paint thinner, and	Isopropanol	D035/D022
Stoddard solvent	Methanol	
	Methyl Ethyl Ketone	
	Methyl Isobutyl Ketone	
	Naphtha	
	Toluene	[
	Xylene	
Oils, off-spec fuels, waste	Barium	D001/D005/
(some of which are ignitable)	Benzene	D006/ D007/
	Cadmium	D008/ D018
	Chromium	
	Lead	
Paint waste, including sludges,	Chromium	F002/D001/D006
thinners, strippers, primers,	Lead	D007/F003/
varnishes (including	Methane, dichloro	F005/U080/
contaminated PPE)	Non-halogenated solvents	D008/D035
	Methyl ethyl ketone	
	Cadmium	
Plastic formulation, including	Ethanol	D001/D002/
waste and off-spec.	Methylene Chloride	D003/F002
	Trichlorotrifluoro-methane	
	Styrene Monomer	
	Urethane Elastomer	
	Toluene Diisocyanate	
	Halogenated Solvents	
Plating and coating waste	Boric Acid	F006/D002/
including caustic cleaning	Cadmium	D006/D007/
solution wastes (excluding	Chromic Acid	D008/D010/
cyanide bearing wastes).	Chromium	F008
Includes spent carbon from	Hydrofluoric Acid	
WWI.		
	Nitric acid	
	Phosphoric Acid	
	Selenium Sedium Hudrowitz	
	Soulum Hydroxide	
	ror Cyanide Juston	
Salta contorrigato J	Codmium	D001/D006/
Sans, contaminated:	Chamium	D001/D000/
Annonium Nitrate	Chronnum	000(1/1000
Nitrate	Dead	
Initiate Sodium Corbonata	UXIDIZEIS	
Sodium Nitrate		
oouum muuuo		1

### TABLE C-2 HAZARDOUS WASTE STORED AT THE CSF NSWC CRANE, CRANE, INDIANA

Sodium Sulfide		
Urethane contaminated wastes	Ethyl Carbamate	F002/U080/U238
	Methylene Chloride	
Vanadium pentoxide/titanium	Vanadium Pentoxide	D002/P120
tetrachloride mix		
Small arms range cleaning	Lead	D008
*Spent carbon from wastewater	Lead	K046/D006/D007/
containing explosives (non-	Spent Carbon	D008/D009/K045
reactive)	Cadmium	
	Chromium	
	Mercury	
Unused or off-specification	2H-1-Benzopyran-2-one, 4-	P001
hazardous materials	hydroxy-2-(3-oxo-1-	
	phenybutyl)-, & salts, when	
	present at concentrations greater	
	than 0.3%	Data
	Arsenic Oxide	P012
	Beryllium Powder	P015
	Brucine	P018
	3-Chloropropionitrile	P027
	Copper Cyanides	P029
	Cyanides	P030
	Nicotine & saits	P075
	p-Introamme	PU//
	Sodium Azide	P105
	A actonitrila	F100
	Apilina	1012
	Ethana 1 1? ovubic (1)	10012
	Enichlorohydrin	10023
	Benzene hexabydro.(1)	0011
	Dibutyl phthalate	11056
	m-Dichlorobenzene	U069
	Dichlorodifluoromethane	U070
	Diethyl phthalate	U075
	p-Dimethylaminoazobenzene	U088
	2,4-Dimethylphenol	U093
	Dimethyl phthalate	U101
	Di-n-octyl phthalate	U102
	1,4 Dioxane	U107
	Lead Acetate	
	Methyl Ethyl Ketone Peroxide	U108
	Beta-Naphthylamine	U144
	Nitrobenzene	U160
	p-Nitrophenol	U168
	N-Nitrosopyrrolidine	U169
	Phthalic anhydride	U170
	Formaldehyde	U180
	2-Picoline	U190

### TABLE C-2 HAZARDOUS WASTE STORED AT THE CSF NSWC CRANE, CRANE, INDIANA

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NSVVC CRANE, CRANE, INDIANA				
Unused or off-specification	Thioacetamide	U122		
hazardous materials (cont'd)	Toluenediamine	U191		
	Toluene Diisocyanate	U218		
	Methane, tribromo-	U221		
	Trichloroethylene	U223		
	Thiram	U225		
	Methoxychlor	U228		
	Benzenamine,2-methyl-	U244		
	Ethanamine, N, N-diethyl-	U247		
	Discarded, unused formulations	U328		
	containing tri-, tetra-, or	U404		
	pentachlorophenol	F027		
Lithium Battery Debris	Lithium	D003		
Battery Debris, Battery Related	Chromium	D002/D007/D008		
Waste	Lead			
Thermal Treatment Burn Ash	Barium	D005		
Solvent Pan	Spent non-halogenated solvents	F003/F004/F005		

#### TABLE C-2 HAZARDOUS WASTE STORED AT THE CSF NSWC CRANE, CRANE, INDIANA

NOTE: (1) Wastes marked with an asterisk\*, indicate wastes that have been determined to not contain free-liquids.

(2) Waste constituents, numbers, and hazard codes shown for a group of chemicals do not necessarily apply to every waste in the grouping. For example, not all acids contain lead.

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### Table C-4

Analytical Parameters for Waste Characterization SPAM, APE, & CDC Treatment Units

#### TABLE C-4

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#### RATIONALE FOR WASTE RESIDUE ANALYTICAL REQUIREMENTS TREATMENT FACILITIES APE 1236-INCINERATOR, CDC, AND SPAM NSWC CRANE

Parameters	SW-846	Analytical Rationale
Arsenic *	TCLP, 1311	
	Metals, 6010	
Barium	TCLP, 1311	
	Metals, 6010	
Cadmium *	TCLP, 1311	
	Metals, 6010	
Chromium *	TCLP, 1311	Loborotory Analysia Mosto
	Metals, 6010	Characterization to determine waste
Lead	TCLP, 1311	hazard class.
	Metals, 6010	
Mercury *	TCLP, 1311	
	Metals, 7470A	
Selenium *	TCLP, 1311	
	Metals, 6010	
2.4 dinitrataluana	TCLP, 1311	
2,4-011110101010110	Metals, 8270D	
	TCLP, 1311	Determine by visual observation that
Hexachlorobenzene * Reactivity	Metals, 8270D	energetic has been treated
	Parameters         Arsenic *         Barium         Cadmium *         Chromium *         Lead         Mercury *         Selenium *         2,4-dinitrotoluene         Hexachlorobenzene *         Reactivity	ParametersSW-846Arsenic *TCLP, 1311 Metals, 6010BariumTCLP, 1311 Metals, 6010Cadmium *TCLP, 1311 Metals, 6010Chromium *TCLP, 1311 

#### NOTES:

\* Denotes munition waste constituents that are infrequently treated. In the event that munition waste are treated at CRANE with these known constituents, samples will be collected and the additional parameters will be analyzed.

\*\* All laboratory analysis will be accomplished using Test Methods for evaluating Solid Waste, Physical/Chemical methods, EPA Publication SW-846 (3<sup>rd</sup> Edition or latest revision).

TCLP - Toxicity Characteristic Leaching Procedure

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# Table I-3

Test Procedures for Explosives and Metals - APE/CDC/SPAM

#### TABLE I-3

#### ANALYTICAL METHODS FOR SAMPLES COLLECTED DURING CLOSURE ACTIVITIES OF TREATMENT UNITS CONTAINED DETONATION CHAMBER, SPAM AND APE 1236 INCINERATOR

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#### **NSWC CRANE, INDIANA**

Parameter	Method <sup>(1)</sup>	Sample Container Size/type	Hold time Criteria <sup>(3)</sup>	Preservation
Metals (Sb, As, Ba, Cd, Cr, Pb, Ni, Se, Ag)	Analytical SW-846 6010D	8 oz. Wide-mouth jar, Teflon- lined lid	Within 180 days	Cool to ≤ 6°C
Metals (Sb, As, Ba, Cd, Cr, Pb, Ni, Se, Ag)	Digestion SW-846 3050B			
Metals (Hg) Digestion/Analytical Method	SW-846 7471B	8 oz. Wide-mouth jar, Teflon- lined lid	Within 28 days	Cool to ≤ 6°C
Explosives <sup>(2)</sup> Extraction/Analytical Method	SW-846 8330A	8 oz. Wide-mouth jar, Teflon- lined lid	Extraction within 14 days; analysis within 40 days of extraction	Cool to ≤ 6°C

#### Notes:

(I)- U.S. EPA, 1986. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. SW-846, 3rd Edition or latest update.

(2)- Explosives to be analyzed 4-amino-2,6-dinitrotoluene, 2-amino-4,6-dinitrotoluene, methyl-2,4,6-trinitrollhenylnitramine, 2,4,6-trinitrotoluene, nitrobenzene, 1,3-dinitrotoluene, 1,3,5-trinitrobenzene, 2,4-dinitrotoluene, 2,6-dinitrotoluene, 2-nitrotoluene, 3-nitrotoluene, 4-nitrotoluene, HMX, and RDX.

(3)-All holding times are from date of collection.

# Table V.C-1a

Specific Munitions (Primers) Treated in the SPAM

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Munition Description	Midas Family/Subfamily	Primer Description	Primer Components	Wt. %
23MM HEI-T OFZT PROJECTILE ASSY	PDLA	PRIMER COMP MP47A5	NITROCELLULOSE	97.9
				1.1
	······································		AKARDITE II	1
ana ana ang ang ang ang ang ang ang ang				athraightean à Pag
<u>en de la presenta</u> a la constitui de la constitui da presenta da la <u>presenta da la presenta da la presenta da</u> N	Rentation from the control of the state of t	ALT PRIMER CHG VTL 1376-0518	NITROCELLULOSE	52.6
				44.8
· · · · · · · · · · · · · · · · · · ·			CENTRALITE	
		······································		0.5
		······································	GRAPHITE	0.05
				0.05
			MACINESICIAL	0.05
CTC 20MAN TO T M205 LNKD DM1			NITROCEULIIIOSE	07.0
				37.5
				1.1
	- Construction and a second	n a na statistic se a statistic se a statistic statistic statistic statistic statistic statistic statistic statistic		L A substitution of the substitution of the
			NITROCELLU OCE	Stage Argenergy
		TALL PRIMER CHG VIL 1376-0518		52.6
			NITROGLYCERIN	44.8
			CENTRALITE	2
				0.5
			GRAPHITE	0.05
			MAGNESIUM OXIDE	0.05
				- Roberten produktion
CTG 20MM TP-T LNKD RHF M206A1	PDLA	PRIMER COMP FA-956 (10522388)	Lead Styphnate	37
			Barium nitrate	32
			Antimony Sulfide	15
			Aluminium Powder	7
			Pentaerythritol	
			tetranitrate (PETN)	5
	· ·		Tetracene	4
	and all and the state of the second secon		an a	
CTG 20MM TP-T M206A1	PDLA	PRIMER COMP FA-956 (10522388)	Lead Styphnate	37
			Barium nitrate	32
			Antimony Sulfide	15
			Aluminium Powder	7
			PETN	5
······································			Tetracene	4
			an a	Reference in the second
CTG 25MM TP-T M793	PDLA	PRIMER COMP FA-956 (10522388)	Lead Styphnate	37
			Barium nitrate	32
			Antimony Sulfide	15
			Aluminium Powder	7
			PFTN	5
			Tetracene	4
	n Alfander - Miller Andreas Andreas and Alfander and Alfander and			Jonatory Star
(TG 25MM APDS-T M791 (Version 1)	PDIA	Booster Pellet		67.72
				12.45
			NITROCELLUS OSE	10.45
				10.21
		<b>_</b>		4.48
·····		<u>_</u>		4.48
				0.14
			ACETYLENE BLACK	0.01
		PRIMER COMP FA-956 (10522388)	Lead Styphnate	37
		1	Barium nitrate	]. 32

		1	Antimony Sulfide	15
			Aluminium Powder	7
	<u> </u>	· · · · · · · · · · · · · · · · · · ·	PETN	5
		1	Tetracene	4
CTG 25MM APDS-T M791 (Version 2)	PDLA	PRIMER COMP FA-956 (10522388)	Lead Styphnate	37
			Barium nitrate	32
		·····	Antimony Sulfide	15
<u></u>			Aluminium Powder	7
· · · · · · · · · · · · · · · · · · ·	·		PETN	5
	<u> </u>	<u></u>	Tetracene	4
CTG 25MM TPDS-T M910	PDLA	Case 25MM Ctg Primed	Not available	
		ALT PRIMER COMP FA-956 (10522388)	Lead Styphnate	37
			Barium nitrate	32
			Antimony Sulfide	15
			Aluminium Powder	7
	<u></u>	<u> </u>	PETN	5
			Tetracene	4
CTG 20MM AP-T M95	PDLA	FA-956 PRIMER COMP	Lead Styphnate	37
		<u></u>	Barium nitrate	32
		······································	Antimony Sulfide	15
			Aluminium Powder	7
<b></b>			PETN	5
			Tetracene	4
	,	ALT PRIMER MIX #1029	BARIUM NITRATE	43
			I FAD STYPHNATE	38
	<u> </u>	<u> </u>	ANTIMONY SULFIDE	9
				8
	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	TETRACENE	2
CTG 20MM 1 AP-T M95/4 TP M204 LNKD M10	PDLA	FA-956 PRIMER COMP	Lead Styphnate	37
	·····	· · · · · · · · · · · · · · · · · · ·	Barium nitrate	32
- Lann, Lanne, Lanne, Lanne, Lanne, Lanne,			Antimony Sulfide	15
			Aluminium Powder	7
			PETN	5
,			Tetracene	4
		ALT PRIMER MIX #1029	BARIUM NITRATE	43
			LEAD STYPHNATE	38
			ANTIMONY SULFIDE	9
			CALCIUM SILICIDE	8
			TETRACENE	2
		allowers and a started with the human	Standing (2005-2007) State	
CTG 25MM APDS-T M791	PDLA	FA-956 PRIMER COMP	Lead Styphnate	37
			Barium nitrate	32
			Antimony Sulfide	15
			Aluminium Powder	7
	<u> </u>		PETN	5
			Tetracene	4
	NAMES OF STREET, DOOR OF			
CTG 20MM 7 TP M55A2/1 TP-T M220 LNKD				<ul> <li>A state of the sta</li></ul>
(7:1)	PDLA	Primer Mix FA-874	BARIUM NITRATE	44.25
	•		·	·····

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	1		LEAD STYPHNATE	40
			CALCIUM SILICIDE	13
			ACACIA TECHNICAL	1
			TNR (VENDOR ITEM) (82-7	1
			ACETYLENE BLACK	0.75
CTG 20MM 9 API MK107/1 AP-T MK108	PDLA	Primer Mix FA-874	BARILIM NITRATE	44.25
				40
	<u> </u>	<u> </u>		13
				1
· · · · · · · · · · · · · · · · · · ·		······································	TNP (VENDOR ITEM) /92 7	
				0.75
			ACETTLENE BLACK	0.73
		CHG MIX		44.4
				44.4
				39.5
	<u> </u>	<b></b>		14.1
			ACETYLENE BLACK	1
			GUM ARABIC	1
CTG 25MM TP PGU-23/U	PDLA	Booster Pellet	POTASSIUM NITRATE	67.23
			BORON AMORPHOUS Pow	13.45
· · · · · · · · · · · · · · · · · · ·			NITROCELLULOSE	10.21
			GRAPHITE	4.48
			POLYVINYL ACETATE	4.48
	<u></u>		DIPHENYLAMINE	0.14
			ACETYLENE BLACK	0.01
		PRIMER COMP FA-956 (10522388)	Lead Styphnate	37
			Barium nitrate	32
			Antimony Sulfide	15
			Aluminium Powder	7
			PETN	5
			Tetracene	4
CTG 25MM TP FRANGIBLE-TR PGU-33/U	PDLA	Booster Pellet	POTASSIUM NITRATE	67.23
			BORON AMORPHOUS Pow	13.45
			NITROCELLULOSE	10.21
			GRAPHITE	4,48
			POLYVINYL ACETATE	4.48
······································		······································	DIPHENYLAMINE	0.14
	<u>                                      </u>			0.01
		PRIMER COMP FA-956 (10522388)	llead Styphnate	37
			Barium nitrate	32
······································			Antimony Sulfide	15
	l		Aluminium Powder	7
	<u> </u>		DETN	,
			Tetracono	
CTG 20MM TP PG1-27/P		Primer Mix FA-874		14 35
				44.25
				40
		wet wet		
F	<u> </u>			1
			ACETVIENDOR TEM) (82-7	1
			ACETYLENE BLACK	0.75
		Drimor Mix FA 974		
				44.25
	1		LEAD STYPHNATE	40

		······································	CALCIUM SILICIDE	13
			ACACIA TECHNICAL	1
			TNR (VENDOR ITEM) (82-7	1
			ACETYLENE BLACK	0.75
an , sann	······································	······································	,,,	· · · · · · · · · · · · · · · · · · ·
CTG 20MM TP PGU-27A/B	PDLA	Primer Mix FA-874	BARIUM NITRATE	44.25
	· · · · · · · · · · · · · · · · · · ·		LEAD STYPHNATE	40
			CALCIUM SILICIDE	13
	······································		ACACIA TECHNICAL	1
			TNR (VENDOR ITEM) (82-7	1
			ACETYLENE BLACK	0.75
CTG 20MM TP-T PGU-30A/B	PDLA	Primer Mix FA-874	BARIUM NITRATE	44.25
· · · · · · · · · · · · · · · · · · ·			LEAD STYPHNATE	40
			CALCIUM SILICIDE	13
			ACACIA TECHNICAL	1
	· _ ·· · _ ·· · ·· · · · ·· ··		TNR (VENDOR ITEM) (82-7	1
			ACETYLENE BLACK	0.75
CTG 20MM 4 TP PGU-27/B/1 TP-T PGU-30/B	PDLA	Primer Mix FA-874	BARIUM NITRATE	44.25
			LEAD STYPHNATE	40
<u></u>	· · · · · · · · · · · · · · · · · · ·			13
		······	ACACIA TECHNICAL	1
	<u> </u>		TNR (VENDOR ITEM) (82-7	
				0.75
			ACCITCENC DEACK	0.75
CTG 20MM 4 PGU-28A/B/1 PGU-30A/BUNKD				
M1442		Primer Mix FA-874		44.25
				44,23
				1
	<u></u>		THE AVENDOR ITEMA (92 7	<u>_</u>
				0.75
			ACEITLENE DEACK	0.73
CTG 20MM 4 PGIL 274/8/1 PGIL 304/8 INKD				
M1442N		Primer Mix FA-874	BARILINA NUTRATE	14.25
				40
		· ····································		13
				1
	· · · · · · · · · · · · · · · · · · ·		TND (VENDOD ITEM) (92 7	
			ACETVIENE PLACK	
			ACETTLENE DLACK	0.73
CTG 20MM FIRING CIRCUIT TEST MK109				
MODO		Primor Mix EA-874		44.25
				44.23
	}			40
<u></u>				13
		······································		
<u></u>			INK (VENDOR HEM) (82-7	
			ACEITLENE BLACK	0.75
		N/A		
	PDLA			
23IVIIVI X 115IVIIVI API BZ-23				
CTC 101414 AD T		Deine - Blie Ch. 071		
	PDLA	Primer Mix FA-874	BARIUM NITRATE	44.25
		<b></b>	LEAD STYPHNATE	40
			CALCIUM SILICIDE	13
			ACACIA TECHNICAL	1

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			TNR (VENDOR ITEM) (82-7	1
			ACETYLENE BLACK	0.75
CTG 20MM MK149 MOD5/W MK7 MOD1 LNK	PDLA	Primer Mix FA-874	BARIUM NITRATE	44.25
			LEAD STYPHNATE	40
			CALCIUM SILICIDE	13
			ACACIA TECHNICAL	1
			TNR (VENDOR ITEM) (82-7	1
			ACETYLENE BLACK	0.75
CTG 20MM BL & P	PDLA	Primer CHG	MERCURY FULMINATE	37.5
			POTASSIUM CHLORATE	37.5
			ANTIMONY SULFIDE	25
CTG 20MM BL&T		PRIMER COMP FA-#90A	POTASSIUM CHI ORATE	53
				25
				12
			DETN	10
			FLIN	10
CTG 20MANA 2 AR T MOE /2 INC MOG				
CTG 20MIN 2 AP-1 M95/2 INC M96				
		PRIMER COMP FA-#90A		53
: 				25
			ANTIMONY SULFIDE	12
			PETN	10
СТ <u>Б 20ММ INC M96</u>	PDLA	PRIMER COMP FA-#90A	POTASSIUM CHLORATE	53
			LEAD THIOCYANATE	25
			ANTIMONY SULFIDE	12
			PETN	10
20MM AA CTG AP-T	PDLA	Primer Mix 390	POTASSIUM CHLORATE	53
			LEAD SULPHOCYANATE	25
			ANTIMONY SULFIDE	12
			PENTAERYTHRITOL	10
CTG 20MM APDS MK149 MOD4	PDLA	Primer Mix FA-874	BARIUM NITRATE	44.25
			LEAD STYPHNATE	40
			CALCIUM SILICIDE	13
			ACACIA TECHNICAL	1
			TNR (VENDOR ITEM) (82-7	1
······································	<u> </u>		ACETYLENE BLACK	0.75
CTG 20MM & TP M5542/1 TP-T M220 I NKD				
M1461		Primer Mix FA-874	BARILIM NITRATE	11 25
				44.23
				1
		· · · · · · · · · · · · · · · · · · ·		1
			TNR (VENDOR HEM) (82-7	<u>ــــــــــــــــــــــــــــــــــــ</u>
			ALETYLENE BLACK	0.75
CTG 20MM TP M55 LNKD MK7 MOD1	PDLA	Primer Mix FA-874	BARIUM NITRATE	44.25
	L		LEAD STYPHNATE	40
			CALCIUM SILICIDE	13
			ACACIA TECHNICAL	1
			TNR (VENDOR ITEM) (82-7	1
			ACETYLENE BLACK	0.75

CTG 20MM TP M55A2	PDLA	Primer Mix FA-874	BARIUM NITRATE	44.25
······			LEAD STYPHNATE	40
			CALCIUM SILICIDE	13
			ACACIA TECHNICAL	1
			TNR (VENDOR ITEM) (82-7	1
· · · · · · · · · · · · · · · · · · ·		······································	ACETYLENE BLACK	0.75
CTG 20MM 7 TP M55A2/1 TP-T M220	PDLA	Primer Mix FA-874	BARIUM NITRATE	44.25
		······································	LEAD STYPHNATE	40
			CALCIUM SILICIDE	13
			ACACIA TECHNICAL	1
			TNR (VENDOR ITEM) (82-7	1
		· · · · · · · · · · · · · · · · · · ·	ACETYLENE BLACK	0.75
CTG 20MM 7 TP M55A2/1 TP-T M220 LNKD	PDLA	Primer Mix FA-874	BARIUM NITRATE	44.25
			LEAD STYPHNATE	40
				13
				1
			TNR (VENDOR ITEM) (82-7	1
			ACETVLENE BLACK	0.75
			ACETTEENE DERK	0.75
CTG 20MM 9 TP M5542/1 TP-T M220 I NKD				
M1442		Primer Mix FA-874	ΒΑΡΙΙΙΜ ΝΙΤΡΑΤΕ	11.25
				44.23
<u> </u>				40
				13
· · · · · · · · · · · · · · · · · · ·	· · · · · ·		TNR A/ENDOR ITEM) (82-7	
		······································		0.75
			ACETTELINE DEACK	0.75
CTG 20MM TP M204		PRIMER COMP EA-956 (10522388)	Load Styphnate	27
		FRIMER COMP 1A-930 (10322388)	Rarium nitrato	
		· · · · · · · · · · · · · · · · · · ·	Antimony Sulfido	15
			Aluminium Doudor	
M			BETTN	
			Tatracano	<del>د</del>
<u> </u>				4
CTG 20MMA TO T M220 FLECT		Primor Mix EA 874		44.25
				44.25
	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		40
				۲ د۲
	<u> </u>			<u>⊥</u>
			ACETVIENE DI ACK	<u>1</u>
			ACETTLENC DLACK	0.75
CTG 200104 4 TP 1055A2/1 TP-1 10220 LNKD		Delmon Min FA 974		44.25
		Primer Wix FA-874		44.25
· · · · · · · · · · · · · · · · · · ·				40
				13
			ACACIA TECHNICAL	1
1				
			ACETYLENE BLACK	0.75
			DOTACEUMA CUILOR ATT	
	PULA	PINIVIEK COIVIP FA-#90A	PUTASSIUM CHLORATE	53
				25
			ANTIMONY SULFIDE	12
			PEIN	10
CTG 20MM 4 INC M96/1 AP-T M95	[PDLA	PRIMER COMP FA-#90A	POTASSIUM CHLORATE	53

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			LEAD THIOCYANATE	25
			ANTIMONY SULFIDE	12
			PETN	10
n ing sa ang manganang na kana ang manganang na kana kana kana kana kana kan				
CTG 20MM TP M99	PDLA	PRIMER COMP FA-#90A	POTASSIUM CHLORATE	53
			LEAD THIOCYANATE	25
		· · · · · · · · · · · · · · · · · · ·	ANTIMONY SHI FIDE	12
······································		······································	DETN	10
			FLIN	10
CTG 20MM TR ELEC MOR		Primor Miy	ΠΑΡΗΛΑΝΙΤΡΑΤΕ	
	PDLA			444
				39.5
				14.1
			ACETYLENE BLACK	1
			GUM ARABIC	1
CTG 20MM TP M55A1	PDLA	Primer Mix FA-874	BARIUM NITRATE	44.25
			LEAD STYPHNATE	40
			CALCIUM SILICIDE	13
			ACACIA TECHNICAL	1
			TNR (VENDOR ITEM) (82-7	1
			ACETYLENE BLACK	0.75
ine and the second state of the second s				
CTG 20MM TP PGU-18/B	PDLA	Primer Mix FA-874	BARIUM NITRATE	44.25
		· · · · · · · · · · · · · · · · · · ·	LEAD STYPHNATE	40
			CALCIUM SILICIDE	13
		······································	ACACIA TECHNICAL	1
			TNR (VENDOR ITEM) (82-7	
· · · · · · · · · · · · · · · · · · ·		······································	ACETVIENE BLACK	0.75
			ACCITELINE DEACK	0.73
		IGNICAD	DOTACCIUNA CHI ODATE	<b>5</b> 2
· · · · · · · · · · · · · · · · · · ·		· ····································	ANTIMONY SULFIDE	14
		······································	GLASS	14
			IEIKAZENE	6
		Laura and		
CTG 22MM SUBCAL PRAC M746	PDLA	IGN CAP	POTASSIUM CHLORATE	52
			ANTIMONY SULFIDE	14
· · · · · · · · · · · · · · · · · · ·			CALCIUM SILICIDE	14
· · · · · · · · · · · · · · · · · · ·			GLASS	14
			TETRAZENE	6
CTG 22MM SUBCAL PRAC M747	PDLA	IGN CAP	POTASSIUM CHLORATE	52
		· · · · · · · · · · · · · · · · · · ·	ANTIMONY SULFIDE	14
			CALCIUM SILICIDE	14
		· · · · · · · · · · · · · · · · · · ·	GLASS	
· · · · · · · · · · · · · · · · · · ·			TETRAZENE	6
CTG 22MM SUBCAL PRAC M744		CAP PERC	N/A	
ALT CTG 22MM SUBCAL PRAC M744		IGN CAP	POTASSIUM CHLORATE	52
			ANTIMONV SULEIDE	1/
				14
				1.4
		······································	TETDAZENIE	
			ICIKAZENC	6
	0014			
CTG 25.4MM DECUY M839	PULA		CALCIUM CHROMATE	80
· · · · · · · · · · · · · · · · · · ·			BORON AMORPHOUS PW	
		BOOSTER CHG	POTASSIUM NITRATE	82

			BORON AMORPHOUS PW	18
CTG 22MM SUBCAL PRAC M896	PDLA	NA		
СТБ 20ММ ТР МК105 МОD0	PDLA	CHG MIX	BARIUM NITRATE	44.4
			LEAD STYPHNATE	39.5
			CALCIUM SILICIDE	14.1
			ACETYLENE BLACK	1
			GUM ARABIC	1
CTG 20MM API MK107 MOD0	PDLA	CHG MIX	BARIUM NITRATE	44,4
			LEAD STYPHNATE	39.5
			CALCIUM SILICIDE	14.1
			ACETYLENE BLACK	1
			GUM ARABIC	1
				2012 242
CTG 20MM LPT T169	PDLA	Primer Mix FA-874	BARIUM NITRATE	44.25
			LEAD STYPHNATE	40
			CALCIUM SILICIDE	13
			ACACIA TECHNICAL	1
			TNR (VENDOR ITEM) (82-7	1
			ACETYLENE BLACK	0.75

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### FIGURE D-2 SPAM LINE DRAWINGS PROCESS FLOW CONTROL DIAGRAMS APE 2271 System Building 146

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### **Figure D-4**

Primer Function System – SPAM Unit

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# Figure D-10

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Air Pollution Control System - SPAM Unit

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# Exhibit B-1

CRANE Site Map and Treatment Locations



### Exhibit B-6

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# Site Topography – SPAM Treatment Unit



# Exhibit B-6A

Site Features, Buildings & Utilities – SPAM Unit





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### Exhibit B-11

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# CRANE Wind Rose



**Climate Bloomington** 

Indiana, United States of America, 39.17°N 86.53°W 235m asl

The meteoblue climate diagrams are based on 30 years of hourly weather model simulations and available for every place on Earth. They give good indications of typical climate patterns and expected conditions (temperature, precipitation, sunshine and wind). The simulated weather data have a spatial resolution of approximately 30 km and may not reproduce all local weather effects, such as thunderstorms, local winds, or tornadoes.

You can explore the climate for any location like the <u>Amazon rainforest</u>, <u>West-Africa savannas</u>, <u>Sahara desert</u>, <u>Siberian</u> <u>Tundra</u> or the <u>Himalaya</u>.

30 years of hourly historical weather data for Bloomington can be purchased with <u>history+</u>. Download variables like temperature, wind, clouds and precipitation as CSV for any place on Earth. The last 2 weeks of past weather data for Bloomington are available for free evaluation <u>here</u>.



### Average temperatures and precipitation

The "mean daily maximum" (solid red line) shows the maximum temperature of an average day for every month for Bloomington. Likewise, "mean daily minimum" (solid blue line) shows the average minimum temperature. Hot days and cold nights (dashed red and blue lines) show the average of the hottest day and coldest night of each month of the last 30 years. For vacation planning, you can expect the mean temperatures, and be prepared for hotter and colder days. Wind speeds are not displayed per default, but can be enabled at the bottom of the graph.

The precipitation chart is useful to plan for seasonal effects such as <u>monsoon climate in India</u> or <u>wet season in Africa</u>. Monthly precipitations above 150mm are mostly wet, below 30mm mostly dry. Note: Simulated precipitation amounts in tropical regions and complex terrain tend to be lower than local measurements.



### Cloudy, sunny, and precipitation days

The graph shows the monthly number of sunny, partly cloudy, overcast and precipitation days. Days with less than 20% cloud cover are considered as sunny, with 20-80% cloud cover as partly cloudy and with more than 80% as overcast. While <u>Reykjavík on Iceland</u> has mostly cloudy days, <u>Sossusvlei in the Namib desert</u> is one of the sunniest places on earth.

Note: In tropical climates like in Malaysia or Indonesia the number of precipitation days may be overestimated by a factor up to 2.

### Maximum temperatures



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The maximum temperature diagram for Bloomington displays how many days per month reach certain temperatures. <u>Dubai</u>, one of the hottest cities on earth, has almost none days below 40°C in July. You can also see the <u>cold winters in</u> <u>Moscow</u> with a few days that do not even reach -10°C as daily maximum.



### Precipitation amounts

The precipitation diagram for Bloomington shows on how many days per month, certain precipitation amounts are reached. In tropical and monsoon climates, the amounts may be underestimated.




The diagram for Bloomington shows how many days within one month can be expected to reach certain wind speeds. Monsoons create steady strong winds on the <u>Tibetan Plateau</u> from December to April, but calm winds from June to October.

Wind speed units can be changed in the preferences (top right).

Wind rose



The wind rose for Bloomington shows how many hours per year the wind blows from the indicated direction. Example SW: Wind is blowing from South-West (SW) to North-East (NE). <u>Cape Horn</u>, the southernmost land point of South America, has a characteristic strong west-wind, which makes crossings from East to West very difficult especially for sailing boats.

#### General information

Since 2007, meteoblue has been archiving weather model data. In 2014 we started to calculate weather models with historical data from 1985 onwards and generated a continuous 30-year global history with hourly weather data. The climate diagrams are the first simulated climate data-set made public on the net. Our weather history covers any place on earth at any given time regardless of availability of weather stations.

The data is derived from our global NEMS weather model at approximately 30km resolution and cannot reproduce detail local weather effects, such as heat islands, cold air flows, thunderstorms or tornadoes. For locations and events which require very high precision (such as energy generation, insurance, etc.), we offer high resolution simulations with hourly data.

## Exhibit B-13

CRANE 100-year Floodplain Map



## Exhibit B-13A

CRANE Watershed Map



## Exhibit B-14

Surrounding Land Use Map - Crane

# Land Use of NSA Crane 1,000 foot buffer from Fence



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## Exhibit F-6

Daily Inspection Form - SPAM

INSPECTOR'S NAME (Printed/Title)		SIGNATURE: TIME OF INSPECTION:		
DATE OF INSPECTION (Month, Day, Y	ear}			
ENVIRONMENTAL PROTECTION DAILY INSPECTION LOG AMMUNITION PEQULIAR EQUIPMENT 2271, SUPER PULL-APART MACHINE				
ITEM	REASON FOR INSPECTION	STATUS ACCEPTABLE (A) UNACCEPTABLE (U)	OBSERVATIONS	DATE AND NATURE OF REPAIRS AND/OR REMEDIAL ACTION
BUILDING 146 FEED ROOM	GENERAL HOUSEKEEPING, FLOORS, FEED ROOM, FEED CONVEYOR			
RADIO ALARM SYSTEM / TELEPHONE OPERABILITY	OPERATIONAL			
FIRE EXTINGUISHERS	SEAL INTACT FULLY CHARGED		·····	
FENCES/WARNING SIGNS	SIGNS IN PLACE AND VISIBLE			
GATES GATE LOCKS	GATES DEFECTIVE; DAMAGED; DOES NOT CLOSE PROPERLY			
DOOR LOCKS	OPEN AND CLOSE PROPERLY			
OPERATING PROCEDURES	PRESENT/AVAILABLE			
CONVEYOR SYSTEM	VISUAL INTEGRITY INSPECTION			
LINE LOADING SYSTEM	VISUAL INTEGRITY INSPECTION			
PULL-APART STATION	VISUAL INTEGRITY INSPECTION			
PROPELLANT DUMP VACUUM HOPPER	VISUAL INTEGRITY INSPECTION			
PRIMER FUNCTION COMPONENT	VISUAL INTEGRITY INSPECTION			
ACOUSTICAL DETECTOR	ENSURE PRIMER INITIATIONS			
VISION STATION	ENSURE PRIMER INITIATIONS	·····		
WET SCRUBBER SYSTEM	VISUAL INTEGRITY INSPECTION			

ENVIRONMENTAL PROTECTION DAILY INSPECTION LOG AMMUNITION PEQULIAR EQUIPMENT 2271, SUPER PULL-APART MACHINE				
ITEM	REASON FOR INSPECTION	STATUS ACCEPTABLE (A) UNACCEPTABLE (U)	OBSERVATIONS	DATE AND NATURE OF REPAIRS AND/OR REMEDIAL ACTION
CARTRIDGE FILTER SYSTEM	VISUAL INTEGRITY INSPECTION			
AIR POLLUTION CONTROL SYSTEM	VISUAL INTEGRITY INSPECTION			
BAGHOUSE	FUNCTION CAPACITY	······································		
WASTE COLLECTION SYSTEM	VISUAL INTEGRITY INSPECTION			
WASTE CONTAINERS	CONDITION SUFFICIENT CAPACITY FOR RUN			
CONTROL EQUIPMENT	VISUAL INTEGRITY INSPECTION			
PPE	AVAILABLE ACCESSIBLE			

COMMENTS:

## Exhibit G-11

# SPAM Facility Evacuation Routes

