DEPARTMENT OF THE NAVY
CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
300 HIGHWAY 361
CRANE INDIANA 47522-5001

IN REPLY REFER TO:

5090
Ser BXTM/3060
APR 2 2013

Mr. Jeff Workman
Office of Land Quality, HW Permits
Indiana Department of Environmental Management
100 N Senate Ave MC65-45
Indianapolis, IN 46204

Dear Mr. Workman:

SUBJECT: RCRA PERMIT RENEWAL APPLICATION ADDITIONAL CHANGES

Naval Surface Warfare Center, Crane Division (NSWC) submits the attached revised Resource Conservation and Recovery Act Hazardous Waste Management Permit documents to update emergency response information and address comments provided by the Indiana Department of Environmental Management (IDEM).

Enclosure (1) is a revised Part A Application. Enclosure (2) provides the revised Appendix (1) Contingency Plan. Enclosure (3) provides revised Tables C-2 and G-2. Enclosure (4) provides a revised Attachment (0) that was updated due to an approval of a No Further Action required determination by IDEM for Solid Waste Management Unit 32/00 Tank Farm. Enclosure (5) provides electronic files for all of the attachments.

If you require any further information, contact me, Mrs. Christine Freeman BXTM, at telephone 812-854-4423, FAX 812-854-4177, or email christine.freeman@navy.mil.

Sincerely,

C. D. FREEMAN
Environmental Protection Mgr
By direction of the
Commanding Officer

Enclosures:
1. Revised Part A Application
2. Revised Appendix 1 Contingency Plan
3. Revised Tables C-2 and G-2
4. Revised Attachment 0
5. Electronic Files

OMB# 2050-0024; Expires 12/31/2014

SEND COMPLETED FORM TO: The Appropriate State or Regional Office.

United States Environmental Protection Agency
RCRA SUBTITLE C SITE IDENTIFICATION FORM

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

Reason for Submittal:

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

2. Site EPA ID Number

EPA ID Number: I N 5 1 7 0 0 2 3 4 9 8

3. Site Name

Name: NAVAL SUPPORT ACTIVITY CRANE

4. Site Location Information

Street Address: NSA CRANE BLDG 3260, 300 HWY 361

City, Town, or Village: CRANE | County: MARTIN

State: INDIANA | Country: USA | Zip Code: 47522-5001

5. Site Land Type

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

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

A. 9 2 8 1 1 0 | C.

B. | D.

7. Site Mailing Address

Street or P.O. Box: BLDG 3260, 300 HWY 361

City, Town, or Village: CRANE

State: INDIANA | Country: USA | Zip Code: 47522-5001

8. Site Contact Person

First Name: CHRISTINE | MI: D | Last: FREEMAN

Title: ENVIRONMENTAL PROTECTION MANAGER

Street or P.O. Box: BLDG 3260, 300 HWY 361

City, Town or Village: CRANE

State: INDIANA | Country: USA | Zip Code: 47522-5001

Email: christine.freeman@navy.mil

Phone: 812-854-4423 | Ext.: | Fax: 812-854-4177

9. Legal Owner and Operator of the Site

A. Name of Site's Legal Owner: NAVAL SUPPORT ACTIVITY CRANE | Date Became Owner: 01/27/1941

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

Street or P.O. Box: BLDG 3260, 300 HWY 361

City, Town, or Village: CRANE | Phone: 812-854-4423

State: INDIANA | Country: USA | Zip Code: 47522-5001

B. Name of Site's Operator: NAVAL SURFACE WARFARE CTR CRANE | Date Became Operator: 01/27/1941

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

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

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

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

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

If "Yes" above, indicate other generator activities in 2-4.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- ☐ a. Processor
- ☐ b. Re-refiner

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

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

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

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

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

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

- ☐ a. College or University
- ☐ b. Teaching Hospital that is owned by or has a formal written affiliation agreement with a college or university
- ☐ c. Non-profit Institute that is owned by or has a formal written affiliation agreement with a college or university

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

11. Description of Hazardous Waste

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

D001	D010	D040	F027	P027	P115	U070
D002	D011	F001	K044	P029	P120	U075
D003	D018	F002	K045	P030	U002	U080
D004	D028	F003	K046	P041	U003	U088
D005	D030	F005	P001	P058	U012	U093
D006	D032	F006	P009	P075	U025	U101
D007	D034	F007	P012	P077	U041	U102
D008	D035	F008	P015	P105	U056	U107
D009	D039	F009	P018	P106	U069	U108

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

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

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

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

- ☐ a. College or University
- ☐ b. Teaching Hospital that is owned by or has a formal written affiliation agreement with a college or university
- ☐ c. Non-profit Institute that is owned by or has a formal written affiliation agreement with a college or university

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

11. Description of Hazardous Waste

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

U122	U218	U404				
U144	U220					
U154	U221					
U160	U223					
U168	U225					
U170	U228					
U180	U244					
U190	U247					
U191	U328					

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

12. Notification of Hazardous Secondary Material (HSM) Activity

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

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

13. Comments

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

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

This page intentionally left blank

EPA ID Number | I | N | 5 | 1 | 7 | 0 | 0 | 2 | 3 | 4 | 9 | 8 |

OMB#: 2050-0024; Expires 12/31/2014

United States Environmental Protection Agency

HARDOUS WASTE PERMIT INFORMATION FORM

1. Facility Permit Contact	**First Name:** CHRISTINE	**MI:** D	**Last Name:** FREEMAN
	Contact Title: ENVIRONMENTAL PROTECTION MANAGER		
	Phone: 812-854-4423	**Ext.:**	**Email:** christine.freeman@navy.mil
2. Facility Permit Contact Mailing Address	**Street or P.O. Box:** BLDG 3260, 300 HWY 361		
	City, Town, or Village: CRANE		
	State: INDIANA		
	Country: USA	**Zip Code:** 47522-5001	
3. Operator Mailing Address and Telephone Number	**Street or P.O. Box:** BLDG 3260, 300 HWY 361		
	City, Town, or Village: CRANE		
	State: INDIANA	**Phone:** 812-854-4423	
	Country: USA	**Zip Code:** 47522-5001	
4. Facility Existence Date	**Facility Existence Date (mm/dd/yyyy):** 01/27/1941		

5. Other Environmental Permits

A. Facility Type *(Enter code)*	B. Permit Number	C. Description
N	INA00215390	NPDES - WASTEWATER
E	T10173410005	TITLE V PERMIT
E	INLA00073	SLUDGE APPLICATION
E	INR50001 7	STORM WATER PERMIT
R	51-06	SOLID WASTE PERMIT - SOLID LANDFILL
N	IN0059633	NPDES - GLENDORA

6. Nature of Business: US DEPARTMENT OF THE NAVY, DEPARTMENT OF DEFENSE

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

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

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

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

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

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

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

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

7. Process Codes and Design Capacities (Continued)

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

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure	C. Process Total Number of Units	For Official Use Only
X	1	S	0	2	533.788	G	001	
	1	S	0	1	163,460	G	003	
	2	X	0	1	150.0	N	003	
	3	T	0	3	7.4	N	002	
	4	X	9	9	7.5	N	001	
	5							
	6							
	7							
	8							
	9							
1	0							
1	1							
1	2							
1	3							

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

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

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

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

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

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

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

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

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

D. PROCESSES

1. **PROCESS CODES:**

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

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

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

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

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

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

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

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

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

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

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D(1))
	1	K	0	5	4	900	P	T	0	3	D	8	0				
	2	D	0	0	2	400	P	T	0	3	D	8	0				
	3	D	0	0	1	100	P	T	0	3	D	8	0				
	4	D	0	0	2												Included with above
	5	D	0	0	2	100	T	S	0	1							Waste Acids
	6	D	0	0	7												Included with above
	7	D	0	0	8												Included with above
	8	P	0	5	8												Included with above
	9	P	0	4	1												Included with above
1	0	P	1	1	5												Included with above
1	1	D	0	0	1	3	T	S	0	1							Aerosols, off-spec, defective
1	2	D	0	0	3	500	T	S	0	1							Demil Ash
1	3	D	0	3	4												Included with above
1	4	D	0	0	7												Included with above
1	5	D	0	0	8												Included with above
1	6	D	0	0	9												Included with above
1	7	D	0	0	2	20	T	S	0	1							Bases waste/caustic cleaner
1	8	D	0	0	7												Included with above
1	9	D	0	0	8												Included with above
2	0	D	0	0	2	15	T	S	0	1							Cyanide bearing wastes
2	1	D	0	0	3												Included with above
2	2	F	0	0	6												Included with above
2	3	F	0	0	7												Included with above
2	4	F	0	0	8												Included with above
2	5	F	0	0	9												Included with above
2	6	D	0	0	1	3	T	S	0	1							Decontamination agent
2	7	D	0	0	2												Included with above
2	8	D	0	0	6	300	T	S	0	1							Grit blast residue
2	9	D	0	0	7												Included with above
3	0	D	0	0	8												Included with above
3	1	F	0	0	1	25	T	S	0	1							Halogenated solvents
3	2	F	0	0	2												Included with above
3	3	D	0	2	8												Included with above
3	4	D	0	3	9												Included with above
3	5	D	0	4	0												Trichloroethylene
3	6	D	0	0	2	1	T	S	0	1							Laboratory waste

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

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
3	7	D	0	0	4												Included with above
3	8	D	0	0	5												Included with above
3	9	D	0	0	6												Included with above
4	0	D	0	0	8												Included with above
4	1	D	0	0	9												Included with above
4	2	D	0	1	0												Included with above
4	3	D	0	1	1												Included with above
4	4	D	0	3	5												Methyl Ethyl Ketone
4	5	D	0	3	9												Tetrachloroethylene
4	6	D	0	0	1	30	T	S	0	1							Non-halogenated solvents
4	7	F	0	0	3												Included with above
4	8	F	0	0	5												Included with above
4	9	U	1	5	4												Included with above
5	0	U	2	2	0												Included with above
5	1	U	0	0	2												Included with above
5	2	D	0	3	5												Included with above
5	3	D	0	0	1	4	T	S	0	1							Waste oil
5	4	D	0	0	5												Included with above
5	5	D	0	0	7												Included with above
5	6	D	0	0	8												Included with above
5	7	D	0	1	8												Included with above
5	8	D	0	0	3	10	T	S	0	1							Ammonium picrate water
5	9	K	O	4	5	30	T	S	0	1							Spent Carbon
6	0	K	0	4	6	1	T	S	0	1							Wastewater treatment sludge
6	1	U	1	2	2	1	T	S	0	1							Formaldehyde
6	2	U	2	2	8	1	T	S	0	1							Trichloroethylene
6	3	U	2	2	3	8	T	S	0	1							Waste isocyanate liquid
6	4	F	0	0	1												Included with above
6	5	P	0	3	0	1	T	S	0	1							Cyanide waste
6	6	D	0	0	1	90	T	S	0	1							Paint waste
6	7	F	0	0	2												Included with above
6	8	F	0	0	3												Included with above
6	9	F	0	0	5												Included with above
7	0	D	0	0	7												Included with above
7	1	D	0	0	8												Included with above
7	2	U	0	8	0												Included with above

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

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
3	7	D	0	0	4												Included with above
3	8	D	0	0	5												Included with above
3	9	D	0	0	6												Included with above
4	0	D	0	0	8												Included with above
4	1	D	0	0	9												Included with above
4	2	D	0	1	0												Included with above
4	3	D	0	1	1												Included with above
4	4	D	0	3	5												Methyl Ethyl Ketone
4	5	D	0	3	9												Tetrachloroethylene
4	6	D	0	0	1	30	T	S	0	1							Non-halogenated solvents
4	7	F	0	0	3												Included with above
4	8	F	0	0	5												Included with above
4	9	U	1	5	4												Included with above
5	0	U	2	2	0												Included with above
5	1	U	0	0	2												Included with above
5	2	D	0	3	5												Included with above
5	3	D	0	0	1	4	T	S	0	1							Waste oil
5	4	D	0	0	5												Included with above
5	5	D	0	0	7												Included with above
5	6	D	0	0	8												Included with above
5	7	D	0	1	8												Included with above
5	8	D	0	0	3	10	T	S	0	1							Ammonium picrate water
5	9	K	O	4	5	30	T	S	0	1							Spent Carbon
6	0	K	0	4	6	1	T	S	0	1							Wastewater treatment sludge
6	1	U	1	2	2	1	T	S	0	1							Formaldehyde
6	2	U	2	2	8	1	T	S	0	1							Trichloroethylene
6	3	U	2	2	3	8	T	S	0	1							Waste isocyanate liquid
6	4	F	0	0	1												Included with above
6	5	P	0	3	0	1	T	S	0	1							Cyanide waste
6	6	D	0	0	1	90	T	S	0	1							Paint waste
6	7	F	0	0	2												Included with above
6	8	F	0	0	3												Included with above
6	9	F	0	0	5												Included with above
7	0	D	0	0	7												Included with above
7	1	D	0	0	8												Included with above
7	2	U	0	8	0												Included with above

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

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
3	7	D	0	0	4												Included with above
3	8	D	0	0	5												Included with above
3	9	D	0	0	6												Included with above
4	0	D	0	0	8												Included with above
4	1	D	0	0	9												Included with above
4	2	D	0	1	0												Included with above
4	3	D	0	1	1												Included with above
4	4	D	0	3	5												Methyl Ethyl Ketone
4	5	D	0	3	9												Tetrachloroethylene
4	6	D	0	0	1	30	T	S	0	1							Non-halogenated solvents
4	7	F	0	0	3												Included with above
4	8	F	0	0	5												Included with above
4	9	U	1	5	4												Included with above
5	0	U	2	2	0												Included with above
5	1	U	0	0	2												Included with above
5	2	D	0	3	5												Included with above
5	3	D	0	0	1	4	T	S	0	1							Waste oil
5	4	D	0	0	5												Included with above
5	5	D	0	0	7												Included with above
5	6	D	0	0	8												Included with above
5	7	D	0	1	8												Included with above
5	8	D	0	0	3	10	T	S	0	1							Ammonium picrate water
5	9	K	O	4	5	30	T	S	0	1							Spent Carbon
6	0	K	0	4	6	1	T	S	0	1							Wastewater treatment sludge
6	1	U	1	2	2	1	T	S	0	1							Formaldehyde
6	2	U	2	2	8	1	T	S	0	1							Trichloroethylene
6	3	U	2	2	3	8	T	S	0	1							Waste isocyanate liquid
6	4	F	0	0	1												Included with above
6	5	P	0	3	0	1	T	S	0	1							Cyanide waste
6	6	D	0	0	1	90	T	S	0	1							Paint waste
6	7	F	0	0	2												Included with above
6	8	F	0	0	3												Included with above
6	9	F	0	0	5												Included with above
7	0	D	0	0	7												Included with above
7	1	D	0	0	8												Included with above
7	2	U	0	8	0												Included with above

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

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
3	7	D	0	0	4												Included with above
3	8	D	0	0	5												Included with above
3	9	D	0	0	6												Included with above
4	0	D	0	0	8												Included with above
4	1	D	0	0	9												Included with above
4	2	D	0	1	0												Included with above
4	3	D	0	1	1												Included with above
4	4	D	0	3	5												Methyl Ethyl Ketone
4	5	D	0	3	9												Tetrachloroethylene
4	6	D	0	0	1	30	T	S	0	1							Non-halogenated solvents
4	7	F	0	0	3												Included with above
4	8	F	0	0	5												Included with above
4	9	U	1	5	4												Included with above
5	0	U	2	2	0												Included with above
5	1	U	0	0	2												Included with above
5	2	D	0	3	5												Included with above
5	3	D	0	0	1	4	T	S	0	1							Waste oil
5	4	D	0	0	5												Included with above
5	5	D	0	0	7												Included with above
5	6	D	0	0	8												Included with above
5	7	D	0	1	8												Included with above
5	8	D	0	0	3	10	T	S	0	1							Ammonium picrate water
5	9	K	O	4	5	30	T	S	0	1							Spent Carbon
6	0	K	0	4	6	1	T	S	0	1							Wastewater treatment sludge
6	1	U	1	2	2	1	T	S	0	1							Formaldehyde
6	2	U	2	2	8	1	T	S	0	1							Trichloroethylene
6	3	U	2	2	3	8	T	S	0	1							Waste isocyanate liquid
6	4	F	0	0	1												Included with above
6	5	P	0	3	0	1	T	S	0	1							Cyanide waste
6	6	D	0	0	1	90	T	S	0	1							Paint waste
6	7	F	0	0	2												Included with above
6	8	F	0	0	3												Included with above
6	9	F	0	0	5												Included with above
7	0	D	0	0	7												Included with above
7	1	D	0	0	8												Included with above
7	2	U	0	8	0												Included with above

10. Map

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

11. Facility Drawing

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

12. Photographs

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

13. Comments

LIST OF EXHIBITS

Exhibit	Description	Att-0 INTRO	Att-I CSF	Att-II MPTS	Att-III CDC	Att-IV APE	Att-V OBOD
G-1	Central Storage Facility Site Plan	✔	☐	☐	☐	☐	☐
G-2	Mobile Plasma Treatment System Feed Room and Process Area	✔	☐	☐	☐	☐	☐
G-3	Contained Detonation Chamber and Surrounding Area	✔	☐	☐	✔	☐	☐
G-4	Ammunition Peculiar Equipment (APE) 1236 Incinerator Kiln and Surrounding Area	✔	☐	☐	☐	✔	☐
G-5	Ammunition Burning Ground and Surrounding Area	☐	☐	☐	☐	☐	☐
G-6	Demolition Range and Old Rifle Range Units and Surrounding Area	☐	☐	☐	☐	☐	☐
G-7	Guidelines for Determining Potentially Incompatible Waste Materials or Components	☐	☐	☐	☐	☐	☐
G-8	Emergency Equipment	✔	☐	☐	☐	☐	☐
G-9	Spill Clean-up Contractors	✔	✔	☐	☐	☐	☐
G-10	Evacuation Plan for the Central Storage Facility (CSF)	✔	✔	☐	☐	☐	☐
G-11	Mobile Plasma Treatment System (MPTS) Personnel Evacuation Routes	✔	☐	☐	☐	☐	☐
G-12	Ammunition Peculiar Equipment (APE) 1236 Incinerator Personnel Evacuation Routes	✔	☐	☐	☐	☐	☐
G-13	Contained Detonation Chamber (CDC) Personnel Evacuation Routes	✔	☐	☐	☐	☐	☐
G-14	Agreements, Arrangements, Letters, and Responses - Hospitals	✔	✔	✔	✔	✔	☐
G-15	Listed Wastes/Representative Wastes and Hazardous Waste Constituents	☐	✔	☐	☐	☐	☐

LIST OF TABLES

Table	Description	Att-0 INTRO	Att-I CSF	Att-II MPTS	Att-III CDC	Att-IV APE	Att-V OBOD
G-1	OB/OD Operations Summary	✔	☐	☐	☐	☐	✔
G-2	Technical Support Recall List	✔	✔	☐	☐	☐	☐
G-3	Telephone Numbers for Reporting Emergencies	✔	✔	☐	☐	☐	☐

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.

1a(. 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 2993A 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 metal-sided 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 2993A 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.

Central Storage Facility – Building 2993, Building 2993A 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) Building 2993A – An open, curbed storage area for containers holding liquid at the CSF, located adjacent to Building 2993;

(C) Gravel Lot – 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) Mobile Plasma Treatment System [MPTS] (CAAA OPERATED)

The site plan for the MPTS is located at the end of this Attachment as Exhibit G-2. The MPTS is a plasma arc incineration system designed by MSE Technologies Application Inc. The MPTS consists of a feed handling system, a processing vessel, and air pollution control system (APCS). The major system components of the MPTS are:

- Primary chamber feed system;
- Primary chamber;
- Plasma arc torch;
- Secondary combustion chamber;
- Dry scrubber system;
- Pressure blowers;
- Electric reheater and nitrogen oxide (NO_X) Selective Catalytic Reduction (SCR) unit;
- Baghouse and;
- Continuous emission monitoring system (CEMS).

Wastes are handled at the MPTS only for the purpose of feeding them into the MPTS Primary Chamber. The maximum quantity of any wastes on site at any single time is limited to the quantity that can be fed in one shift. Emergency events resulting from the releases of liquids are of concern only for the fuel oil feed to the electric generator. All of the wastes treated are solids and no liquid treatment residues are generated.

Munitions awaiting treatment could detonate prior to being placed on the MPTS feed conveyor. Munitions placed on the MPTS feed conveyor could detonate prior to entering the Primary Chamber. It is extremely unlikely that the MPTS treatment residues, air pollution control system (APCS) residues, or slag residue would present a detonation/explosion hazards. In all cases the hazards would be limited to the MPTS through exposure to potential bodily injury or death. Off-site impacts would not occur as a result of unplanned/uncontrolled explosion or fire.

The Primary Chamber could be damaged as a result of excessive energetic levels in some feed items resulting in explosions that could damage the MPTS. Damage resulting from excessive energetic levels in feed items is not considered to be a significant possibility because prior to being fed to the Primary Chamber, a safety evaluation is performed to determine the maximum feed rate for the material 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 MPTS and explode in the APCS. However, this is unlikely because the Primary Chamber operates at a minimum temperature of 1,500°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 MPTS personnel and would not have off-site impacts.

The principle emergency event that might occur at the MPTS is an unplanned/uncontrolled explosion or fire. A 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 MPTS 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) Detonation Chamber — 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) Kiln – 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 Table G-1.

(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 bum 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 bum 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.

Open Detonation Operations at the Demolition Range. 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 **Table G-1**. The OD/ORR unit is located as shown in **Exhibit G-6**.

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 ~~A qualified Senior Fire Officer will always be available on-site 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.

~~A qualified Senior Fire Officer will always be available to coordinate all emergency response measures.~~

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 Table G-2.

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 **Table G-3**.

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) Explosion: 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) Fire: 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) Spill: 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) Major Malfunction of Process Equipment: 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.

- Severe Weather Conditions: 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. **Exhibit G-15** 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-2993A 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 re-enter the facility until the emergency situation has been mitigated.

G-4i(2) MPTS Container Spills and Leakage

Munitions items will be treated in the MPTS, any events resulting from the releases of liquids are of concern only for the fuel oil feed to the electric generator. 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 MPTS 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 MPTS, 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 re-enter 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) [illegible]ills 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 2993A 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 **Exhibit G-10**.

G-7b Mobile Plasma Treatment System

The main routes for exiting the MPTS feed room would include utilizing the west exit door then going east from the building then turning north towards Building 69 or utilizing the north exit door then continuing north towards Building 69.

The main routes for exiting the MPTS control room would include utilizing the east exit door then going then turning north towards Building 69 or utilizing the north exit door then continuing north towards Building 69.

The main routes of exit from the MPTS operating area would include going south from the concrete pad then turning either east or west while heading away from the source of danger followed by turning north towards Building 69.

An illustration of evacuation routes from the MPTS 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.

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	Mobile Plasma Treatment System (MPTS)
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.

A. PART A APPLICATION

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) Mobile Plasma Treatment System (MPTS),
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.

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)	Exhibit B-11
Fire Control Facilities, Proposed, New, and Existing	
Hazardous Waste Mgmt. Units	
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
Operational Units in HWM Facility Locations	
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.
- Exhibits B-10 and V.B-12 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 **Exhibits B-10** and **B-13**. The floodplain information was taken from Flood Insurance Maps 180470 0001-0007, published by the Federal Emergency Management Agency (FEMA). Watershed maps are also included in **Exhibits B-10** and **V.B-12**.

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
Mobile Plasma Treatment System	Boggs & Turkey Creek 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, MPTS, 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 and/or Burns City gates 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 semi-dump truck or 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 ¾-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-4d 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 **Exhibit V.B-13** 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

Table C-1 provides a list of anticipated test parameters that may be 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.

Table C-2 shows hazardous waste constituents that are present in containerized waste. **Table C-3**, 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 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-1(b-h)

As mentioned above the CSF is a temporary storage facility. Wastes brought to this facility are transported offsite for treatment, storage, or disposal at a RCRA facility. Therefore subsections C-1 (b-h) 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 Rationa

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) will be performed to characterize all solid waste that may potentially have a hazardous waste characteristic before landfill disposal is used. Table C-1, contains a list of the analysis parameters that may 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 'ampling Methods

There are several sampling methods utilized for collecting waste samples at the CRANE facility. Sampling methods are determined based known constituents and type of waste (solid or aqueous). It is the intent of CRANE 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, MPTS, 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 container 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 **Exhibit C-4**.

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 EPA manual SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3rd 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-5** and **C-4**, 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-2e Additional Requirements for Waste Generated Off-Site

C-2e(1) CSF

The CSF will not be utilized to store wastes generated off-site. Therefore there is no procedure for the CSF to inspect or analyze representative portions of wastes generated off-site. Also, there is no statistical method of determining a representative sample. 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) MPTS, 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, non-military 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 Teflon-lined 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 3435 at the CSF are determined through laboratory analysis or process knowledge. The associated hazardous waste codes are given in Table C-2.

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	MPTS	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			✔		✔
D-9	Boilers and Industrial Furnaces					
D-10	Containment Buildings					

E. GROUNDWATER MONITORING

Ground water monitoring is specific to individual treatment or storage areas. In some cases (i.e., CSF, MPTS, 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 Groundwater 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 Groundwater 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-1a Security Procedures and Equipment

F-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's boundaries.

"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 Log is kept in Building 3260 at CRANE.

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 MPTS and 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 Test

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 signal-controlled 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 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.

II. 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) 40 CFR 172.704
(4) Miscellaneous.

II-1 Outline of the Training Program

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

Target Audience: Hazardous Waste Workers and Supervisors who manage waste at a less than 90-day 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 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 date. The Refresher course will be provided annually 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 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 units personnel:

Length of Training: Initial - 24 hours (On-line Training Module or sufficient training/experience to objectively demonstrate competency in the topics listed below.)

Refresher - 8 hours.

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.
l. Waste Military Munitions 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.

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:

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.
(l) 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.
(l) 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 40 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 Doctors, Police Officers, Shift Duty Officers, Guard Lieutenants, Police 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
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
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:

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.

Annual Refresher:

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 Personnel, Emergency Medical Technicians, Command Duty Officers, Police Officers, Shift Duty Officers, Guard Lieutenants, Police Captains, Emergency Medical Technicians, Hospital Corpsmen, Occupational Health Nurses, Medical Doctors, Environmental Protection Workers/Managers, Industrial Hygienists, and the Joint Exercise Team (JET).

Length of Training: 4 hours.

Frequency of Training: 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) Environmental Site Manager – 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) CAAA Environmental Protection Specialist – 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) Environmental Protection Specialist(s) – 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) Hazardous Waste Handler(s) –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) Industrial Engineering Technicians/Project Engineers – 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 MPTS 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) Miscellaneous Classifications of Personnel – 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 II-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., (7) and (8)) 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 II-1a. Guidance for fulfilling these duties is outlined in **Exhibit H-1** 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 II-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 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.

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

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[4]
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[4]
SWMU 15/06	Roads and Grounds Area (R&GA)	NFA[4]
SWMU 16/16	Cast High Explosives Fill/B146 Incinerator (B146)	RFI
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)	RFI

SWMU 23/00	Battery Shop (BS)	RFI
SWMU 24/00	Sludge Drying Beds A & B (SDBA&B)	NFA[4]
SWMU 25/07D	Highway 58 Dump Site A (H58A)	RFI
SWMU 26/08D	Highway 58 Dump Site B (H58B)	NFA
SWMU 27/00	Illuminant Building B-126 (B126)	RFI
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[4]
SWMU 31/00	Compressed Gas Cylinder Site (CGC)	NFA[4]
SWMU 32/00	Tank Farm (TF)	~~RFI~~NFA
SWMU 33/00	Bioremediation Facility (BRF)	NFA[4]
SWMU 34/00	Old Gun Tub Storage Lot (OGTSL)	RFI
AOC 01/00	Grit Blast Site – B3220 (GBS)	NS
AOC 02/00	B-2044 Drop Tower/Test Rail (B2044)	NFA
UXO 06/00	Test Pads on Hill East of B198	NFA[4]
UXO 07/00	Old Rifle Range (Ranges and Berms)	RFI
UXO 08/00	Pyro Area Test Burn Pads	RFI

LTM = Long-Term Monitoring;

CMS = Corrective Measures Study

RFI = RCRA Facility Investigation

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).

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) WMU 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 µg/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 groundwater 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. The 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 and OPR. 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 adjoin 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. 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. A CMIP is planned for early 2013.

J-2 WMU 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 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. Further delineation is ongoing. An IM removal of contaminated soils from the B55 area began in 2008 and was completed in 2012. In addition, fou r 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. In addition, fuel oil

contamination was 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. Additional investigations and removals are planned for 2013.

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

Previous work has shown both soil and groundwater 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 groundwater 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 groundwater 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 groundwater 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. The RFI report will be prepared in 2012.

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 groundwater. 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 groundwater. 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 groundwater. 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) WMU 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 groundwater. 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 is planned for 2013.

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 samples continue to be collected at SWMU 17 in support of an IM project planned for 2012.

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 groundwater. 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(SWMU 20/00 CAAA Quality Assurance uality Control (QA/QC) TEST AREA (CAA

Quality Assurance/Quality Control (QA/QC) testing of pyrotechnics devices is conducted at Building 2167. Lead chromate contamination has been identified on the surface of the ground from testing MARK1-3 flares. There is an indication of stressed vegetation from past operations. An RFI for all media is not currently scheduled. In 2004, the site was declared ineligible for ER,N funding. In 2010, Crane Army Ammunition Activity received funding for the RFI. Fieldwork is expected to begin in 2012.

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.

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

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 is planned to address all media. RFI fieldwork began in 2011.

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. An RFI work plan is planned to address all media. An RFI Workplan is in preparation to address all media. Fieldwork is anticipated to be performed in 2012.

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, so was 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. An RFI Report is in preparation.

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 groundwater. An NFA request was approved for groundwater 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 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. An RFI report is in preparation.

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 fieldword 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 ~~No Further Action~~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 is planned for 2012. The subsequent RFI recommended NFA for the site. The NFA request was approved by IDEM on March 13, 2012.

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) AOC 02/00 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 will investigate impacts to all media and the need for remedial action. A site investigation was conducted in 2007 under an approved workplan as UXO 5. An NFA request was approved by IDEM in March 2009.

J-2(kk) UXO 06/00 Test Pads on Hill East 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 is planned for 2012.

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-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.

B. RCRA Facility Investigation Work Plan

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. Reports

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.

Task One: Description of Current Conditions

A. Facility Background
B. Nature and Extent of Contamination
C. Implementation of Interim Measures

Task Two: RFI Work Plan Requirements

A. Quality Assurance Project Plan
B. Health and Safety Plan
C. Community Relations Plan

Task Three: Facility Investigation

A. Environmental Setting
B. Source Characterization
C. Contamination Characterization
D. Potential Receptor Identification

Task Four: 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. Facility Background

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 groundwater 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

d. 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. Health and Safety Plan

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

l. 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. Community Relations Plan

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

Task Three: Facility Investigation

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. A description of the regional and facility specific geologic and hydrogeologic characteristics affecting groundwater 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;

(4) Identification and characterization of areas and amounts of recharge and discharge;

(5) Regional and facility-specific groundwater flow patterns; and

(6) Characterize seasonal variations in the groundwater flow regime.

b. An analysis of any topographic features that might influence the groundwater 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 groundwater 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 groundwater 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 pattems; 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_3), Nitrate (NO_3^{-1}), Phosphate (PO_4^{-3}), 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. Air

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;

(4) Relative humidity/dew point;

(5) Atmospheric pressure;

(6) Evaporation data;

(7) Development of inversions; and

(8) Climate extremes that have been known to occur in the vicinity of the facility, including frequency of occurrence.

b. A description of topographic and manmade features which affect air flow and emission patterns, including:

(1) Ridges or hills;

(2) Valleys;

(3) Surface water bodies (e.g., rivers, lakes, ponds, etc.);

(4) Wind breaks and forests; and

(5) Buildings.

B. Source Characterization

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 groundwater, 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. Groundwater Contamination

The Permittee shall conduct a Groundwater 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. Soil Contamination

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. Surface-water and Sediment Contamination

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. Air Contamination

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 groundwater. 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. Potential Receptors

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 groundwater:

a. Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial); and

b. Location of groundwater 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. Data Analysis

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. Protection Standards

1. Groundwater Protection Standards

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

a. The Groundwater 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 groundwater; 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: Submittals

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. Progress Reports

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 all findings;

3. Summaries of all changes made in the RFI during the reporting period;

4. Summaries of all contacts with representatives of the local community, public interest groups, or State government during the reporting period;

5. Summaries of all 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. RFI Report

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:

Task Six: Identification and Development of the Corrective Measure Alternative or Alternatives

A. Description of Current Situation
B. Establishment of Corrective Action Objectives
C. Screening of Corrective Measure Technologies
D. Identification of the Corrective Measure Alternative or Alternatives

Task Seven: Evaluation of the Corrective Measure Alternative or Alternatives

A. Technical/Environmental/Human Health/Institutional
B. Cost Estimate

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

A. Technical
B. Environmental
C. Human Health
D. Cost

Task Nine: Submittals

A. Progress Reports
B. CMS Report

Task Six: Identification 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. Description of Current Situation

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 mwhere 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:

(2) (1) Effectiveness shall be evaluated in terms of the ability to 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; andUseful 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. Technical

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. Human Health

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. Environmental

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. Cost

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

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

A. Progress Reports

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 all findings;

3. Summaries of all changes made in the CMS during the reporting period;

4. Summaries of all contacts with representatives of the local community, public interest groups or State government during the reporting period;

5. Summaries of all 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. CMS Report

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)

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:

Task Ten: Corrective Measure Implementation Program Plan

A. Program Management Plan
B. Community Relations Plan

Task Eleven: 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 concems 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.

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

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;

    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;

    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;

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. Cost Estimate

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 field-verified 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. Responsibility and Authority

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

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:

A. Progress Reports

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 all findings;

3. Summaries of all changes made in the CMI during the reporting period;

4. Summaries of all contacts with representatives of the local community, public interest groups or State government during the reporting period;

5. Summaries of all 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. CMI REPORTS

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.

TABLE C-2
HAZARDOUS WASTE STORED AT THE CSF
NSWC CRANE CRANE, INDIANA

WASTE	HAZARDOUS CONSTITUENT	HAZARDOUS WASTE #
Acids, Waste	Acetic Acid Chromium Fluoboric Acid Hydrochloric Acid Lead Nitric Acid Phosphoric Acid Sodium Acid Sulfate Fluoroacetic Acid DPN Phosphate Thallium sulfate	D002/D008 D007 P058 P041 P115
Aerosols, Off-spec and defective can (propellants)	Butane Propane	D001
Bases, waste including caustic cleaners	Ammonium Hydroxide Lead Sodium Hydroxide	D002/D007/D008
Caustic cleaning	Chromium Lead Sodium Hydroxide	D002/D007 D008
Cyanide Bearing waste including some plating wastes	Potassium Thiocyanate Sodium Hydroxide Sodium Cyanide	D002/D003/F006/ F007/F008/F009
Decontamination Agent (Caustic)	Ethylene Glycol Monoethyl Ether Sodium Hydroxide	D001/D002
*Grit Blast Residue (Dust particles removed from air in abrasive sand/grit blast operations removing paint)	Cadmium Chromium Lead	D006 D007 D008
*Incineration, Demil Ash	Chromium Lead Mercury	D007/D008/ D009/D034
*Ash from open burning / open detonation operations	Lead	D008
Halogenated solvents, spent including degreasers and coolants	Dichloroethane Methylene Chloride 1,1,1-Trichloroethane Trrichloroethylene (TCE) 1,1,2-Trichloro-1,2,2-Trifluoroethane Tetrachloroethylene	F001/F002/ D040/D028/ D039
*Metallic salt contaminated waste/filtrate from sludge burning pans (non-reactive)	Arsenic Barium Cadmium Chromium Lead Mercury	D002/D004/ D005/D006/ D007/D008/ D009/D010/ D011/D035 D039

TABLE C-2
HAZARDOUS WASTE STORED AT THE CSF
NSWC CRANE CRANE, INDIANA

	Selenium Silver Methyl Ethyl Ketone Tetrachloroethylene	
Non-halogenated solvents, spent and off-spec, including mineral spirits (petroleum distillates), paint thinner, and Stoddard solvent	Acetone Ethanol Isopropanol Methanol Methyl Ethyl Ketone Methyl Isobutyl Ketone Naptha Toluene Xylene	D001/F003/ F005/U154/ U220/U002/ D035
Oils, off-spec fuels, waste (some of which are ignitable)	Barium Benzene Chromium Lead	D001/D005/ D007/D008/ D018
Paint waste, including sludges, thinners, strippers, primers, and varnishes	Chromium Lead Methane, dichloro Non-halogenated solvents Cadmium	F002/D001/ D007/F003/ F005/U080/ D008
Plastic formulation, including waste and off-spec.	Ethanol Methylene Chloride Trichlorotrifluoro-methane Styrene Monomer Urethane Elastomer Toluene Diisocyanate Halogenated Solvents	D001/D002/ D003/F002
Plating and coating waste including caustic cleaning solution wastes (excluding cyanide bearing wastes)	Boric Acid Cadmium Chromic Acid Chromium Hydrofluoric Acid Lead Nitric acid Phosphoric Acid Selenium Sodium Hydroxide For Cyanide bearing (see Cyanide Wastes)	F006/D002/ D006/D007/ D008/D010/ F008
Salts, contaminated: Ammonium Nitrate Ceric Ammonium Nitrate Sodium Carbonate Sodium Nitrate Sodium Sulfide	Cadmium Chromium Lead Oxidizers	D001/D006/ D007/D008

TABLE C-2
HAZARDOUS WASTE STORED AT THE CSF
NSWC CRANE CRANE, INDIANA

Urethane contaminated wastes	Ethyl Carbamate Methylene Chloride	~~U233/~~F002
Vanadium pentoxide/titanium tetrachloride mix	Vanadium Pentoxide	D002/P120
Small arms range cleaning	Lead	D008
*Spent carbon from wastewater containing explosives (non-reactive)	Lead Spent Carbon	K046/D006/D007/ D008/D009/K045
Unused or off-specification hazardous materials	2H-1-Benzopyran-2-one, 4-hydroxy-2-(3-oxo-1-phenybutyl)-, & salts, when present at concentrations greater than 0.3%	P001
	Aresenic Oxide	P012
	Beryllium Powder	P015
	Brucine	P018
	3-Chloropropionitrile	P027
	Copper Cyanides	P029
	Cyanides	P030
	Nicotine & salts	P075
	p-Nitroaniline	P077
	Sodium Azide	P105
	Sodium Cyanide	P106
	Acetonitrile	U003
	Aniline	U012
	Ethane,1,1'-oxybis-(1)	U025
	Epichlorohydrin	U041
	Benzene, hexahydro-(1)	U056
	Dibutyl phthalate	U069
	m-Dichlorobenzene	U070
	Dichlorodifluoromethane	U075
	Diethyl phthalate	U088
	p-Dimethylaminoazobenzene	U093
	2,4-Dimethylphenol	U101
	Dimethyl phthalate	U102
	Di-n-octyl phthalate	U107
	1,4 Dioxane	U108
	Lead Acetate	U144
	Methyl Ethyl Ketone Peroxide	U160
	Beta-Naphthylamine	U168
	Nitrobenzene	U169
	p-Nitrophenol	U170
	N-Nitrosopyrrolidine	U180
	Phthalic anhydride	U190
	Formaldehyde	U122
	2-Picoline	U191

TABLE C-2
HAZARDOUS WASTE STORED AT THE CSF
NSWC CRANE CRANE, INDIANA

Unused or off-specification hazardous materials (cont'd)	Thioacetamide	U218
	Toluenediamine	U221
	Toluene Diisocyanate	U223
	Methan, tribromo-	U225
	Trichloroethylene	U228
	Thiram	U244
	Methoxychlor	U247
	Benzenamine,2-methyl-	U328
	Ethanamine,N,N-diethyl-	U404
	Discarded, unused formulations containing tri-, tetra-, or pentachlorophenol	F027

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.

TABLE G-2

TECHNICAL SUPPORT PERSONNEL RECALL LIST
NSWC CRANE
CRANE, INDIANA

NAME	HOME ADDRESS	HOME PHONE	WORK PHONE	CELL PHONE	DUTIES
Timothy Eckert	718 N 500 W Huntington, IN 46750	(260) 388-5061	(812) 854-3581	(812) 295-6059	Primary/Alternative OSC
Jon Thomas	1943 N Corwin Rd. Bloomfield, IN 47424	(812) 384-4980	(812) 854-5642	(812) 296-0725	Primary/Alternative OSC
Barry Tedrow	11902 E 650 S Loogootee, IN 47553	(812) 644-7873	(812) 854-4637	(812) 296-0745	Primary/Alternative OSC

NAME	WORK	DUTIES	EXPERTISE
S. Webster P. Ingram	(812) 854 - 1495	Public Affairs Officer	Public Affairs / Media
D. Johnson	(812) 854 - 1481	Environmental Program Manager (CAAA)	Permit Compliance
C. Freeman	(812) 854 - 4423	Environmental Protection (EP) Manager	Hazardous Wastes, Chemicals
S. Haraburda	(812) 854 - 6723	Manufacturing and Engineering Directorate	Pyrotechnics, Explosives
J. Mikac	(812) 854 - 3961	Depot Operations Manager (CAAA)	Material Shipment
J. Blackwell	(812) 854 - 2221	Director Code J	Explosives, Pyrotechnics, Propellants
R. Gillis	(812) 854 - 6968	Safety Program Manager (CAAA)	Safety

CAAA – Crane Army Ammunition Activity