



DEPARTMENT OF THE NAVY

CRANE DIVISION  
NAVAL SURFACE WARFARE CENTER  
300 HIGHWAY 361  
CRANE, INDIANA 47522-5000

IN REPLY REFER TO:

5090  
Ser 095/9197

**Z1 OCT 1999**

U.S. Environmental Protection Agency, Region V  
Waste, Pesticides, & Toxics Division  
Waste Management Branch  
Illinois, Indiana, and Michigan Section  
Attn: Mr. Peter Ramanauskas (DW-8J)  
77 West Jackson Blvd.  
Chicago, IL 60604

Dear Mr. Ramanauskas:

Crane Division, Naval Surface Warfare Center (NAVSURFWARCENDIV Crane) submits for review and approval, as enclosure (1), three copies of the response to comments and revised pages for the Interim Measures Report for Sludge Drying Beds A & B, Solid Waste Management Unit 24/00. Enclosure (2) is the required certification statement.

NAVSURFWARCENDIV Crane point of contact is  
Ms. Christine D. Freeman, Code 09511, telephone 812-854-4423.

Sincerely,

A handwritten signature in cursive script, appearing to read "James M. Hunsicker".

JAMES M. HUNSICKER, DIRECTOR  
ENVIRONMENTAL PROTECTION DEPARTMENT  
BY DIRECTION OF THE COMMANDER

Encl:

- (1) Response to Comments/Revised Pages for SWMU 24/00 IMR
- (2) Certification Statement

Copy to: (w/o encls)  
ADMINISTRATIVE RECORD (2 copies)  
COMNAVSEASYS COM (SEA OOT)  
TOLTEST Crane  
SOUTHNAVFACENGC COM (Code 1864)

**Interim Measure Report  
SWMU 24/00 - Sludge Drying Beds A & B**

**Naval Surface Warfare Center  
Crane, Indiana**

Comments by: U.S. EPA Region 5

***Comment 1:***

Section 3.5 refers to Drawing B-6 in Appendix B. This drawing is not present in the Appendix.

***Response 1:***

The correct drawing number should have been Drawing B-5, which is included in Appendix B. Section 3.5 has been revised accordingly.

***Comment 2:***

Table 3-6: Why isn't Beryllium included in this table ? The cleanup level for Trichloroethene is listed as None Available (NA). Table 5 in Appendix A shows an Interim Measure cleanup level for Trichloroethylene, a synonym for Trichloroethene, to be 14,000 ug/kg. Should this be the value included in Table 3-6?

***Response 2:***

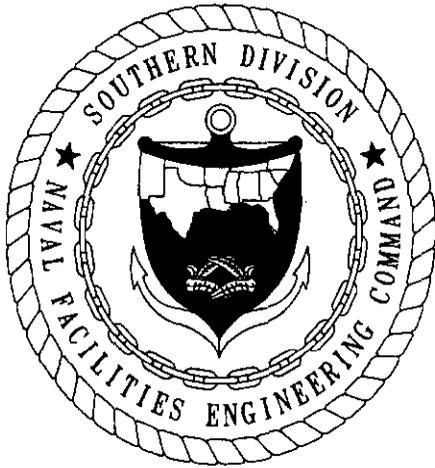
Table 3-6 has been revised to include Beryllium and the cleanup level for Trichloroethylene. The second page of Table 3-6, found on Page 3-18 of this report has been revised to include samples 24/00-069 through 24/00-073. In addition, Table 3-4, NSWC Crane Background/Backfill Samples Analytical Results Summary, has been revised to include Beryllium results. Table 3-4 summarizes the results of background samples collected from the on-site borrow pit and virgin soil borrow sources confirming that concentrations of various compounds tested, including Beryllium, are above established interim measures cleanup levels and are naturally present in soils in the surrounding area.

**Interim Measure Report  
SWMU 24/00 - Sludge Drying Beds A & B**

**Naval Surface Warfare Center  
Crane, Indiana**

**ERRATA SHEET**

1. Remove cover and spine label from Volume 1 and 2 binders dated February, 1997 and discard. Replace with Green Final covers and spine labels dated October, 1999.
2. Remove title page and signature page dated February, 1997 from Volume 1 and replace with Final cover and signature page dated October, 1999. Remove title page from Volume 2 and replace with Final cover page dated October, 1999.
3. Remove page 3-2 and discard. Replace with revised page 3-2 dated 10/15/99 which now references drawing B-5 in Appendix B.
4. Remove page 3-8 and discard. Replace with revised page 3-8 dated 10/15/99 which contains the additional background data for Beryllium.
5. Remove pages 3-17 and 3-18 and discard. Replace with revised pages 3-17 and 3-18 dated 10/15/99 which contains Beryllium results, the revised cleanup level for Trichloroethene, and the additional sample results for samples 24/00-069 through 24/00-073.



**FINAL**

Interim Measures Report  
SWMU - 24/00  
Sludge Drying Beds A and B

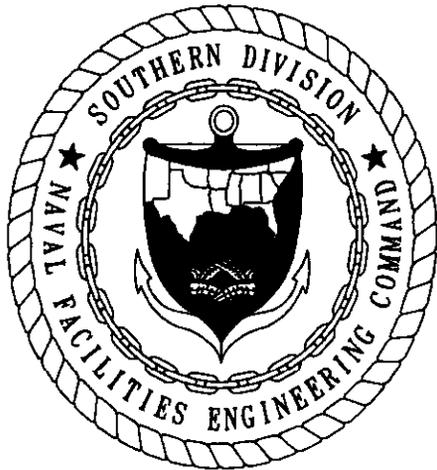
Volume 1

NSWC Crane  
Crane, Indiana

Unit Identification Code: N00164  
Contract No. N62467-93-D-1106

October, 1999

**Southern Division  
Naval Facilities Engineering Command  
North Charleston, South Carolina  
29419-9010**



**FINAL**

Interim Measures Report  
SWMU - 24/00  
Sludge Drying Beds A and B

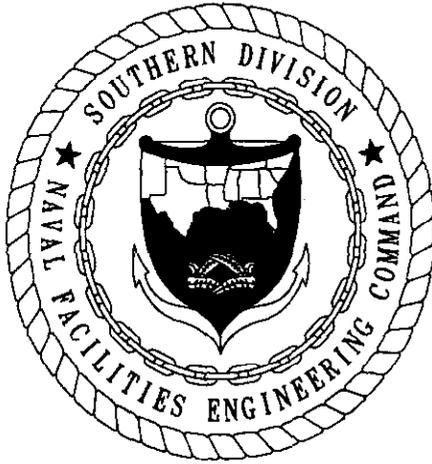
Volume 2

NSWC Crane  
Crane, Indiana

Unit Identification Code: N00164  
Contract No. N62467-93-D-1106

October, 1999

**Southern Division  
Naval Facilities Engineering Command  
North Charleston, South Carolina  
29419-9010**



## **FINAL**

Interim Measures Report  
SWMU - 24/00  
Sludge Drying Beds A and B

Volume 1

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**INTERIM MEASURES REPORT  
SWMU - 24/00  
Sludge Drying Beds A and B**

**NSWC CRANE  
CRANE, INDIANA**

**Volume 1**

**October, 1999**

**CONTRACT N62467-93-D-1106  
DELIVERY ORDER #0009  
STATEMENT OF WORK #007**

*Prepared for*

**SOUTHERN DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
2155 Eagle Drive  
P.O. Box 190010  
North Charleston, South Carolina 29419-9010**

*Prepared by:*

**MORRISON KNUDSEN CORPORATION  
2420 Mall Drive  
Corporate Square 1 - Suite 211  
North Charleston, South Carolina 29406**

**PREPARED/APPROVED BY:**

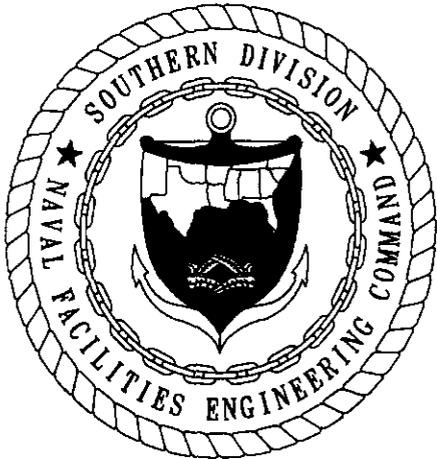
  
Valarie Ann Mariola  
MK Project Engineer

10/15/99  
Date

**APPROVALS:**

  
Alan Fosdick  
MK Program Manager

10/15/99  
Date



**FINAL**

Interim Measures Report  
SWMU - 24/00  
Sludge Drying Beds A and B

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### 3.3 SOURCE OF BACKFILL

The on-site borrow pit was an approved source of backfill material based upon samples previously collected. Two samples (NSWC-BP\BF-003, NSWC-BP\BF-004) were collected from the borrow pit, analyzed for Appendix IX compounds and determined to be free of contaminants of concern. Backfill material results are included in Table 3-4. The use of onsite backfill required a modification to the work plan which was approved. The Work Plan modification is included in Appendix A.

### 3.4 EXCAVATION AND SLUDGE BED CONFIRMATION SAMPLING

Material from Sludge Bed B was excavated and transported directly to the on-site landfill beginning on October 9, 1995. Eighteen truckloads (14 cubic yards each) of the excavated material (sludge and debris) from Sludge Bed B were disposed at the on-site landfill as special waste. A copy of the approval for the Crane Landfill to accept the waste is included in Volume 2, Appendix E. The inlet piping and valves removed during excavation were transported to the Defense Reutilization and Marketing Office (DRMO). The concrete debris was removed and used as backfill to fill a low area near the maintenance building adjacent to the golf course and Biofacility.

After excavation and removal activities, 12 confirmation samples (24/00-055 through 24/00-067 and two duplicate samples 24/00-058 and 24/00-068) were collected and submitted to a laboratory for analysis of 40 CFR 264, Appendix IX compounds. A five foot grid interval was laid out over each of the three "beds" located within Sludge Bed B. The number of samples collected was based on the cube root of the number of grid intersections. Each "bed" in Sludge Bed B had 40 grid intersections, thus by rounding up, four samples were collected from each "bed". A random number generator was used to determine the grid sample number. The sample map for each bed and the random number chart is included as Figure 3-3. Figure 3-4 shows the actual field location of each sample.

The confirmation sample 24/00-068 results indicated that the sludge at one location in Sludge Bed B contained 4,4-DDT above the target cleanup level. Thus, on February 7, 1996, additional excavation was conducted in this area. The area was excavated five feet by ten feet by an additional 2.5 feet deep. The material was considered contaminated and was removed and transported to the on-site landfill for disposal. Approximately five cubic yards of material was removed. The resultant excavation was resampled. Five confirmation samples (24/00-069 through 24/00-073) were collected on February 7, 1996 and were analyzed for 40 CFR 264, Appendix IX compounds. The analytical results established the material remaining at Sludge Bed B was below target cleanup levels. The "Detail" in Figure 3-4 identifies the sample locations used for the confirmation resampling. Table 3-6 identifies all detected analytes from the confirmation sampling.

### 3.5 SITE RESTORATION

The excavated area was backfilled with material from the approved on-site borrow source. The backfill, including topsoil, was placed and the site was restored to original grade. The site was surveyed at final grade and is shown on drawing B-5 in Appendix B. The area was seeded, mulched, and subsequently monitored to ensure establishment of adequate ground cover to prevent erosion. Adequate ground cover has been reestablished. This work was accepted by the Navy on July 12, 1996. A copy of SWMU 24/00 Acceptance and Turnover Statement is included with the regulatory documents in Volume 2, Appendix E. Photographs showing the progress of the work and the restoration are included in Appendix C.

The fencing from around Sludge Bed B was removed in its entirety instead of a partial replacement, as was originally planned. Approved changes to the Work Plan are included in Appendix A. All fencing that was removed and any salvageable material was transported to DRMO.

**TABLE 3-4  
NSWC CRANE BACKGROUND/BACKFILL SAMPLES  
ANALYTICAL RESULTS SUMMARY**

COMPOUND	SAMPLE # (NSWC)	BP\BF-001	BP\BF-002	BP\BF-003	BP\BF-004	BF\BF-005	BF\BF-005RE	BF\BF-006
	SAMPLE DATE TYPE	08/12/1995 SOIL	08/12/1995 SOIL	10/12/1995 SOIL	10/12/1995 SOIL	10/27/1995 SOIL	10/27/1995 SOIL	10/27/1995 SOIL
	CLEANUP LEVEL ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Total Cyanide		ND	ND	ND	ND	ND		
Total Sulfide	NA*	ND	ND	ND	ND	ND		
Methylene Chloride	22,000	21	16		10	41(B)	9(B)	19(B)
Acetone	9,200,000	11(J)	7.7(J)					
Arsenic	970	9400	9,000	7800	6300	1900		1800
Cobalt	100	3900	4600	8600	7000	2400		3200
Beryllium	400	570	560	740	810	ND	NA*	ND
Chloroform	960							
MEK (2-Butanone)	5,200,000							
Bromodichloromethane	2,900							
4-methyl-2-pentanone	2,000,000							
4,4, DDT	8							
Tetrachloroethene					34		1.4(J)	
Toluene					16			
m+p Xylene					4.7(J)		3.3(J)	
o Xylene							1.3(J)	

Notes:

\* None Available

(B) indicates the compound was also present in the associated field or trip blank.

(J) indicates the value is estimated

NSWC CRANE

SWMU #24/00

Interim Measures Report

**TABLE 3-6  
SWMU 24/00 CONFIRMATION SAMPLES  
ANALYTICAL RESULTS SUMMARY**

	SAMPLE #	24/00-055	24/00-056	24/00-057	24/00-058	24/00-059	24/00-060	24/00-061	24/00-062	24/00-063	24/00-064	24/00-065	24/00-066	24/00-067	24/00-068	24/00-RB9	24/00-TB6	24/00-TB7	
	SAMPLE DATE	10/17/1995	10/17/1995	10/17/1995	10/17/1995	10/17/1995	10/17/1995	10/17/1995	10/17/1995	10/17/1995	10/17/1995	10/17/1995	10/17/1995	10/17/1995	10/17/1995	10/17/1995	10/17/1995	10/17/1995	
	TYPE	SOIL	LIQUID**	LIQUID	LIQUID														
COMPOUND	CLEANUP LEVEL ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg				
Total Sulfide	NA*									66000									
Methylene Chloride	22,000	8		3.8 (J)		5.7	5.1(J)	4.8 (J)	3.9 (J)		14	3.6 (J)		11	15	18	13	2.6 (J)	4.2 (J)
Acetone	9,200,000	23 (J)		17 (J)	19(J)	11(J)	10 (J)	15 (J)	13 (J)	18 (J)	9.1 (J)	24 (J)	22 (J)						
4-methyl-2-pentanone	2,000,000	ND	13 (J)	ND	ND	ND													
Tetrachloroethene	22,000	5.1 (J)	13	15	5.9	3.7(J)	2.1 (J)	4 (J)	3.4 (J)		9.1		7	3.4 (J)	26	6.6			
Trichloroethene	14,000	ND	4J	4.7J		1.8J		19	2.2J		30		5J	7.3	25	35			
Toluene	280,000				12										3.9J	ND	ND	ND	ND
Arsenic	970	1700	2,900	4300	4000	3100	3700	3100	2800		1300	5300	3400	3400	3200				
Cobalt	100	1400	3300	2200	3000	3800	4800	4400	2200		2000	3400	4200	4200	4300				
Beryllium	400	ND	270	460	370	260	250	270	230	300	ND	410	300	260	240				
Phenanthrene	660				77J	37J								88J					
Fluoranthene	1,800,000				78J		81J							83J	41J				
Pyrene	1,200,000				87J		87J							66J	36J				
Benzo(a)anthracene	660				39J		ND												
Chrysene	800						44J												
1,2,3,4,6,7,8,9-OCDD		0.427						0.353					0.389	0.524	0.601				
2,4,D	390,000																		
Silvex	110																		
4,4 DDT	8																		
4,4-DDE	2500							19					4.4(P)		9.1				
Chlordane	660																		
Endosulfane	2000					2.2(P)								8.6(P)					

Notes: A blank space indicates that the sample was non-detect.

\* None Available

\*\* All Compounds were reported by the laboratory as undetected.

(B) indicates the compound was also present in the associated field, trip, or method blank.

(J) indicates the value is estimated

**TABLE 3-6  
SWMU 24/00 CONFIRMATION SAMPLES  
ANALYTICAL RESULTS SUMMARY**

(P) indicates there is a greater than 25% difference for detected concentrations between the two GC columns. The lower value is reported.

COMPOUND	SAMPLE #	24/00-069	24/00-070	24/00-071	24/00-072	24/00-073
	SAMPLE DATE	02/07/1996	02/07/1996	02/07/1996	02/07/1996	02/07/1996
	CLEANUP	SOIL	SOIL	SOIL	SOIL	SOIL
	LEVEL ug/kg					
Methylene Chloride	22,000	3 (J,B)	4 (J,B)	3 (J,B)	3 (J,B)	3 (J,B)
Acetone	9,200,000	12	7 (J)			
Cobalt	100	1970 (B)	844 (B)	1690 (B)	1890 (B)	2340 (B)
Arsenic	970	5000	2990	4570	2530	4850
Beryllium	400	369 (B)	307 (B)	478 (B)	245 (B)	215 (B)
Dieldrin	53	0.33 (J)	0.11(J,P)	0.089(J,P)		
4,4-DDE	2500	0.2(J,P)		0.19(J,P)		0.19(J,P)
4,4-DDD	3500			0.18 (J,P)		
4,4-DDT	8		0.18 (J,P)	0.27(J)		
Endosulfane I	2000			0.13(J,B,P)		
Endosulfane II	2000		0.16(J,P)			
Methoxychlor	200,000	0.74(J)	0.41(J,P)			
delta BHC	6.03		0.088(J,P)	0.081(J)		0.068(J)
alpha BHC	2.01				0.10(J,P)	

Notes: A blank space indicates that the sample was non-detect.

\* None Available

\*\* All Compounds were reported by the laboratory as undetected.

(B) indicates the compound was also present in the associated field, trip, or method blank.

(J) indicates the value is estimated

(P) indicates there is a greater than 25% difference for detected concentrations between the two GC columns. The lower value is reported.

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 fine and imprisonment for knowing violations.

  
SIGNATURE

END. Prot. Dept. Mgr  
TITLE

10/21/55  
DATE