Risk Screening Documentation
SWMU-26/08D
Highway 58 Dump Site B

NSWC Crane
Crane, Indiana

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

June 2000

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

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NSWC CRANE
CRANE, INDIANA

June 2000

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

Prepared for

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

CAAA	Crane Army Ammunition Activity
CFR	Code of Federal Regulations
HSWA	Hazardous and Solid Waste Amendments
IM	Interim Measure
IMR	Interim Measures Report
MK	Morrison Knudsen Corporation
NSWC	Naval Surface Warfare Center
NEESA	Naval Energy and Environmental Support Activity
RFI	RCRA Facilities Investigation
RCRA	Resource Conservation and Recovery Act
SWMU	Solid Waste Management Unit
U.S. EPA	United States Environmental Protection Agency

1.0 INTRODUCTION

1.1 SUMMARY OF FACILITY

Naval Surface Warfare Center (NSWC) Crane consists of 62,463 acres located approximately 75 miles south of Indianapolis, Indiana, as shown in Figure 1. The facility provides support for equipment, shipboard weapons systems, and ordnance. In addition, NSWC Crane supports the Crane Army Ammunition Activity (CAAA) that includes the production, renovation, storage, shipment, demilitarization and disposal of conventional ammunition.

The topography of NSWC Crane consists of flat to gently rolling terrain dissected by numerous well-defined drainage basins. Surface elevation ranges from approximately 470 feet at the drainage exiting the southern boundary of Crane to 860 feet on a ridge in the west-central portion of the facility. Ridge crests generally range in elevation from 750 to 800 feet [NEESA, 1983].

Natural surface drainage at NSWC Crane is dendritic and consists of five drainage basins. Dump Site B is located in Basin IV which occupies the central portion of the facility (Figure 2). Surface drainage in the immediate area of Dump Site B empties into Turkey Creek. All surface drainage from the NSWC empties into the East Fork of the White River south of the installation [NEESA, 1983].

NSWC Crane is underlain by unconsolidated deposits of Quaternary (Pleistocene) age and residual soil derived from Pennsylvanian and Mississippian bedrock. The unconsolidated deposits are limited to the small floodplains and are composed of alluvial, colluvial, and paludal (marshland) silt, sand, and gravel; lacustrine clay, silt, and sand; and outwash plain gravel, sand, and silt. The remainder of NSWC Crane surficial deposits consist of residual clays and silt from the Pennsylvanian Raccoon Creek Group and Mississippian Stephensport and West Baden Groups with small area of Quaternary clay, silt, and sand (Lacustrine deposits). The bedrock units beneath the facility, primarily Raccoon Creek and Stephensport Groups containing predominately sandstone and shale, reportedly dip gently from the Cincinnati Arch to the Illinois Basin in the Southwest [NEESA, 1983].

Boring logs collected from the facility show the major soil type is a 2- to 3-inch-thick surface layer of brown to tan organic clay loam underlain by clay intermixed with silts and sand. Occasionally, a clay hardpan occurs between 25 and 32 inches below the surface [NEESA, 1983].

1.2 SUMMARY OF SOLID WASTE MANAGEMENT UNIT (SWMU)

Promulgation of the United States Environmental Protection Agency's (U.S. EPA's) regulatory program under the Resource Conservation and Recovery Act (RCRA) provided the impetus to identify and control environmental contamination from past practices at NSWC Crane. On December 23, 1989, the U.S. EPA issued the Federal portion of the final RCRA Part B permit for NSWC Crane to the U.S. Navy. The permit renewal, for a period of five years, was issued on July 31, 1995. This permit also contains the State permit conditions, which were issued separately by the State of Indiana RCRA program. The permit establishes the Hazardous and Solid Waste Amendment (HSWA) corrective action requirements and compliance schedules which obligate the U.S. Navy to perform a RCRA Facility Investigation (RFI) at 30 SWMUs, to conduct Corrective Measures Studies, and to implement corrective measures if needed. Voluntary interim measures were performed at SWMU-26/08D (Highway 58 Dump Site B) as part of the RCRA Part B Permit for NSWC Crane.

SWMU 26/08D, Highway 58 Dump Site B, is located in the central portion of NSWC Crane, as shown in Figure 3. The disposal area, covering approximately 160 feet by 43 feet, is located at the bottom of a stone cliff and slopes gently toward the south. The area surrounding SWMU 26/08D is heavily wooded

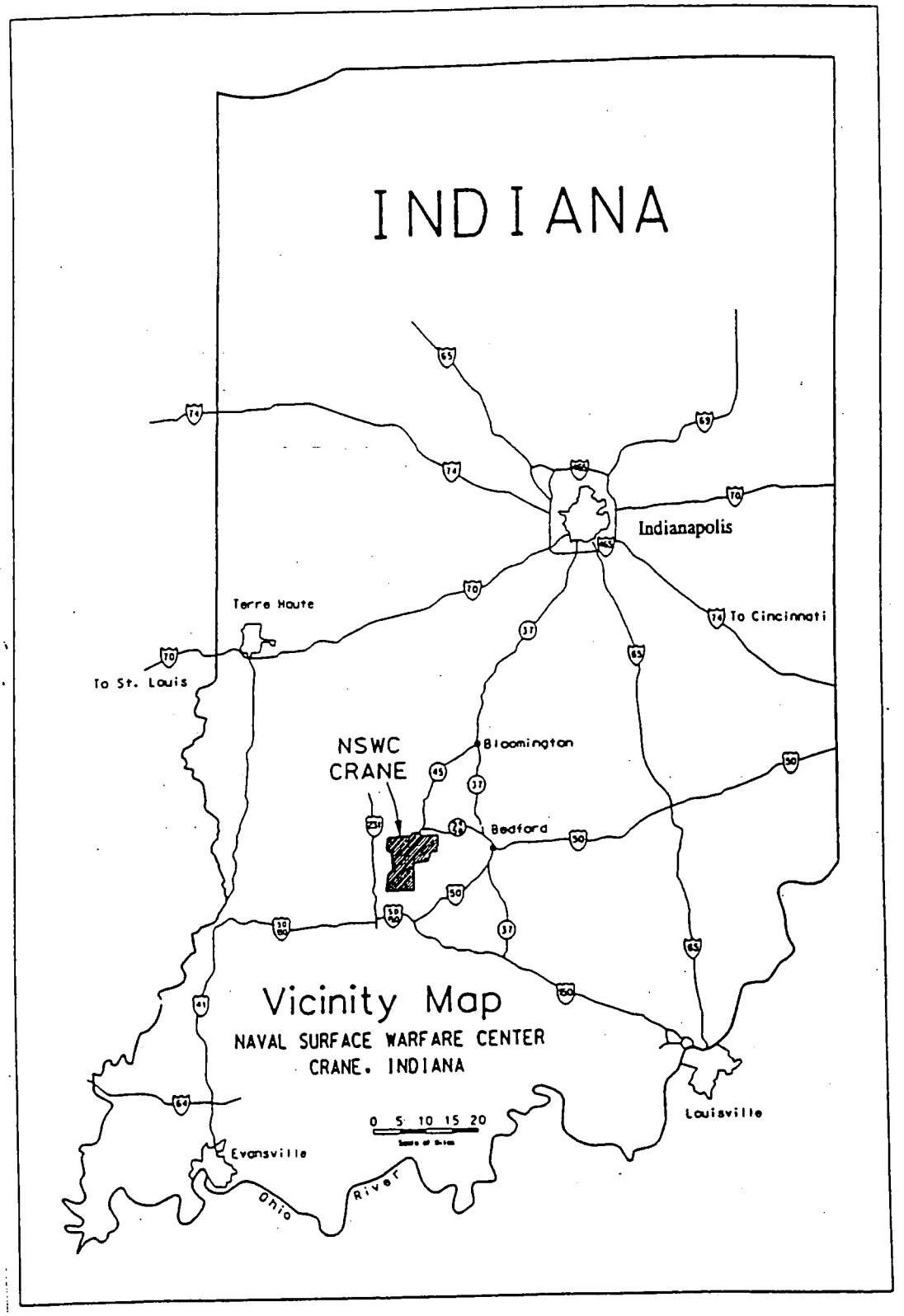


FIGURE 1
NSWC CRANE VICINITY MAP

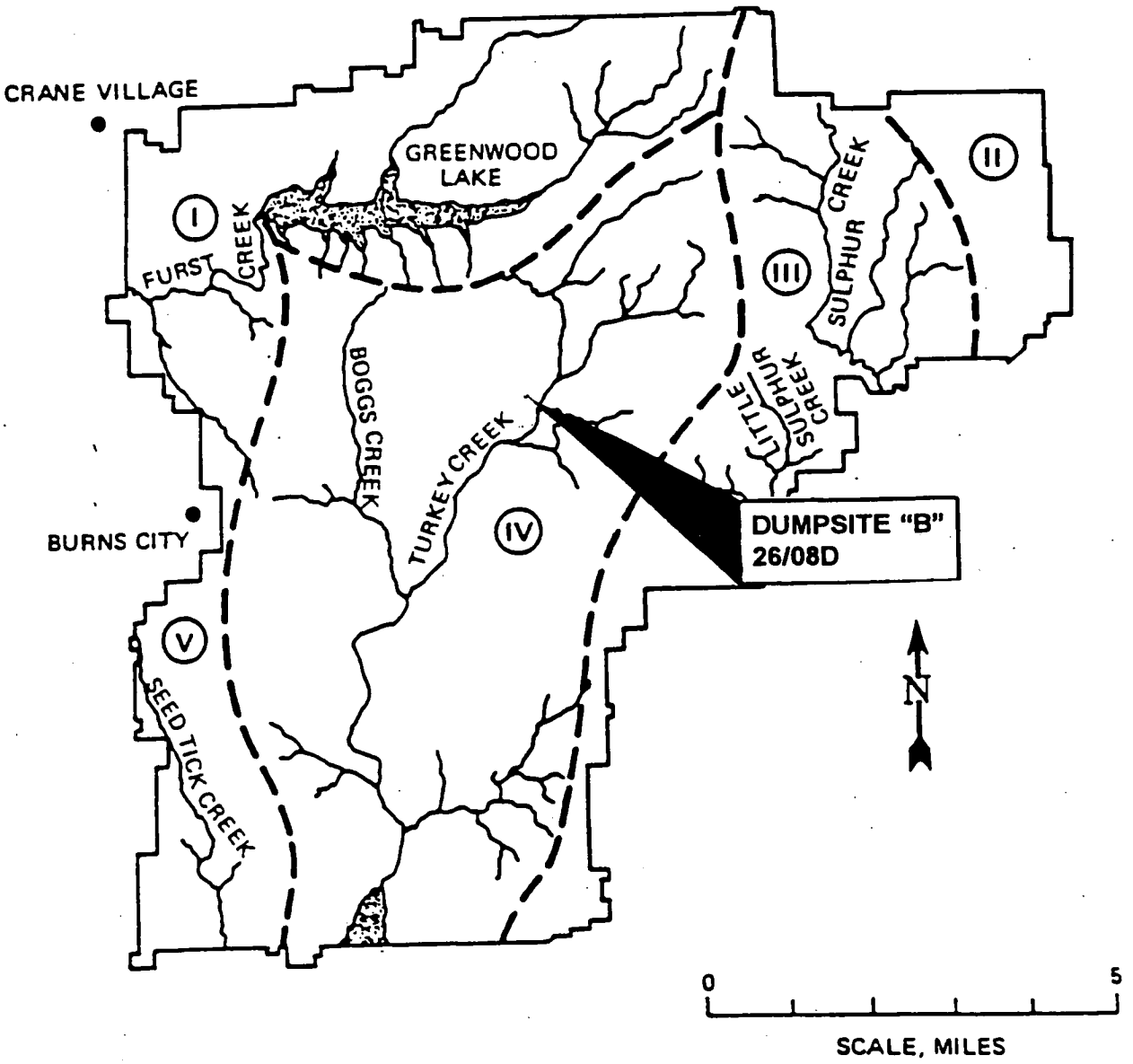


FIGURE 2
SURFACE DRAINAGE OF NSWC CRANE

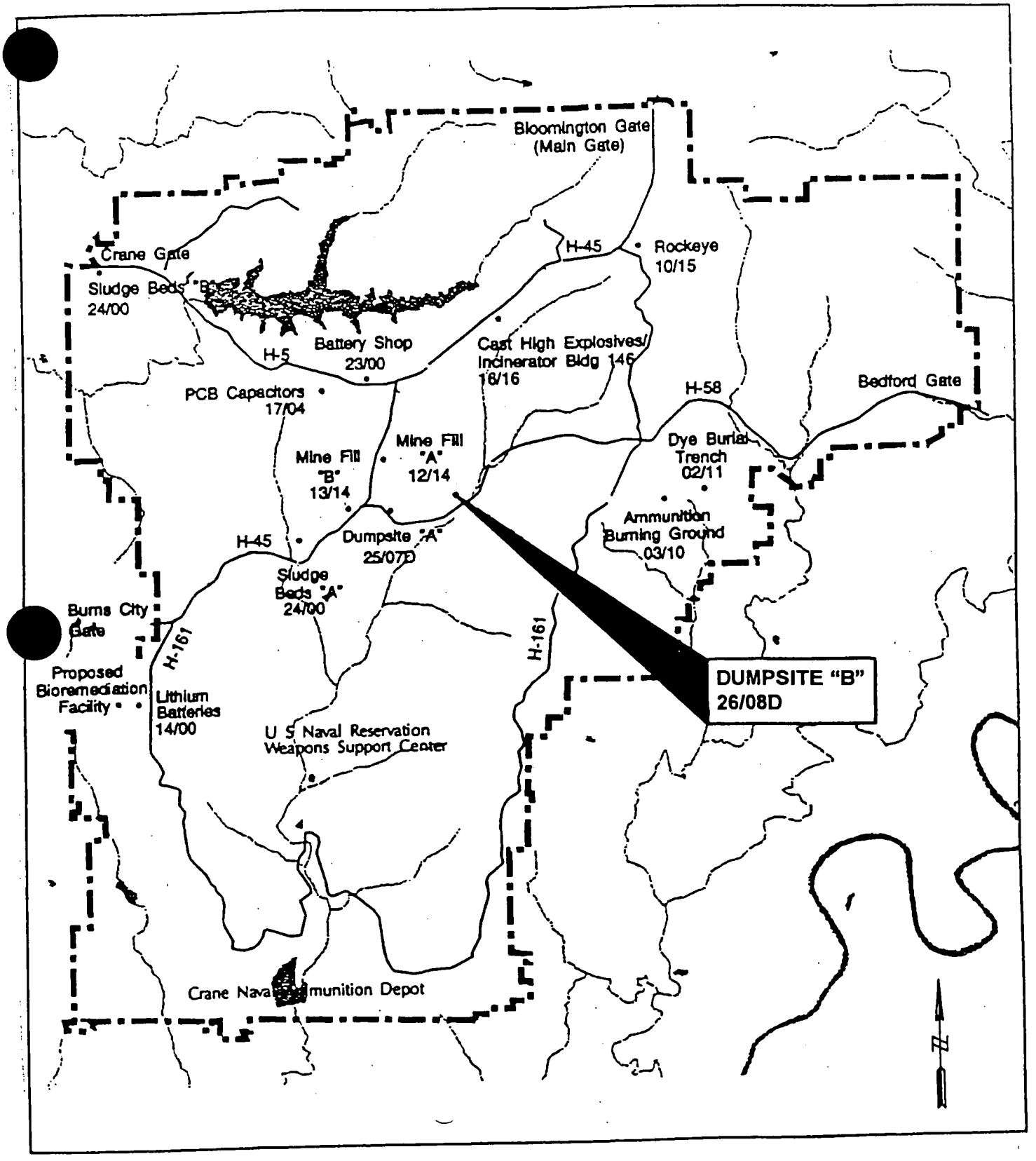


FIGURE 3
LOCATION OF SOLID WASTE MANAGEMENT UNITS

with underbrush and a thick layer of leaves covering the ground. SWMU 26/08D currently is exposed bedrock with a covering of leaves and brush piles. Access to the site is via a gravel lane off Highway 58 (H-58).

1.3 INTERIM MEASURE PERFORMED

Morrison Knudsen Corporation (MK) prepared the following project documents that described the procedures used to execute the voluntary Interim Measure (IM) at SWMU-26/08D :

- *Work Plan for Interim Measures Cleanup at Solid Waste Management Units #23/00, #25/07D, and #26/08D*, Revision B, as amended dated August 25, 1995 [MK, 1995a]
- *Task-Specific Site Safety and Health Plan, Supplement to Work Plan for Solid Waste Management Units #23/00, #25/07D, and #26/08D*, Revision B, dated August 25, 1995 [MK, 1995b]-
- *General Project Plans for Interim Measures Cleanup*, Revision C, August 18, 1995, consisting of the following plans:
  - *Quality Control Plan*, Rev. C, August 18, 1995 [MK, 1995c]
  - *Quality Assurance Project Plan*, Rev. C, December 29, 1995 [MK, 1995d]
  - *Waste Management Plan*, Rev. C, August 18, 1995 [MK, 1995e]
  - *Sampling and Analysis Plan*, Rev. C, August 18, 1995 [MK, 1995f]
  - *Environmental Protection Plan*, Rev. C, August 18, 1995 [MK, 1995g]

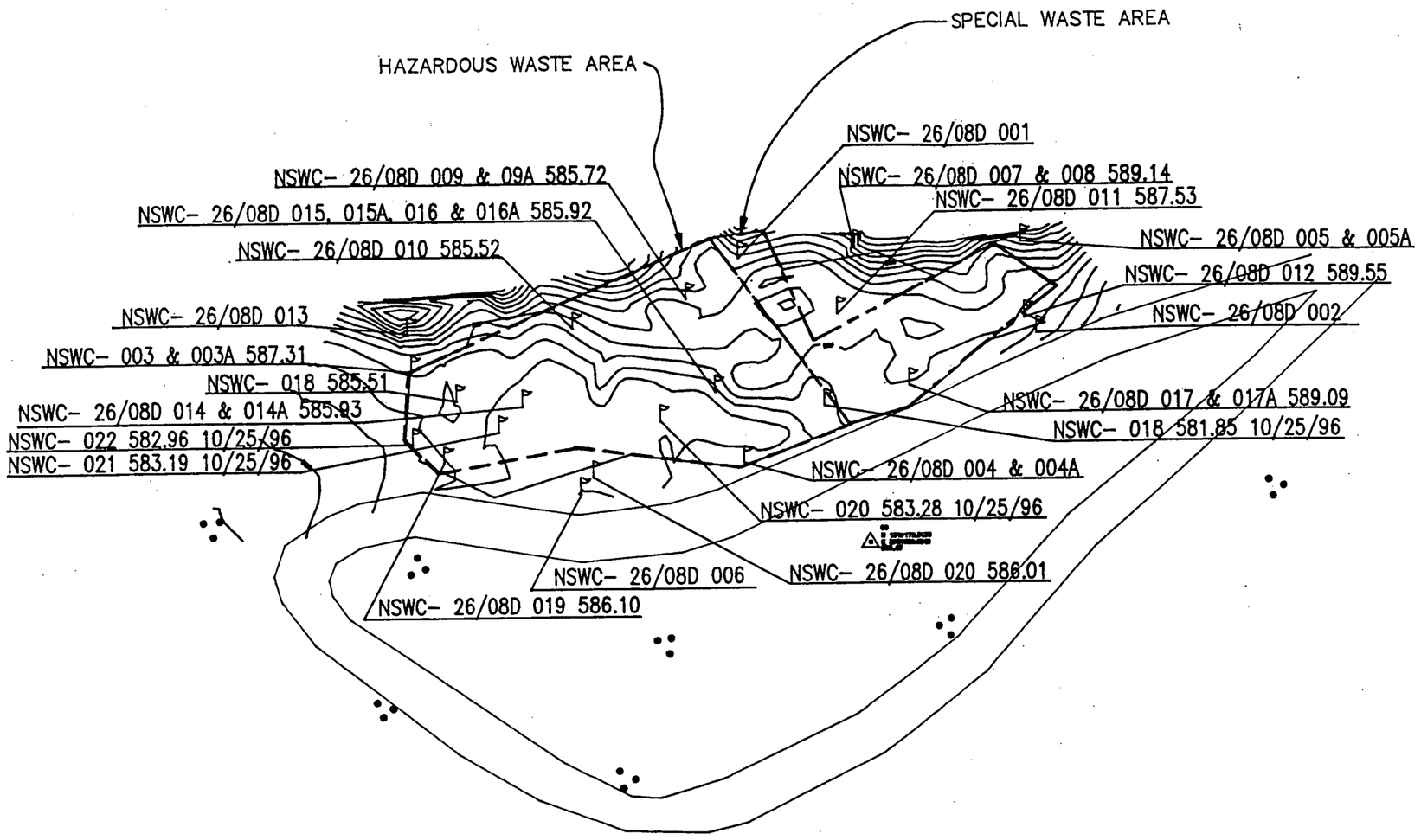
MK received approval of the Work Plan for SWMUs #23/00, #25/07D, and #26/08D on September 27, 1995.

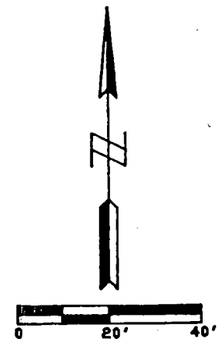
Debris was removed from Dump Site B using hand and machine methods in late 1995 and early 1996. Excavation continued until bedrock was exposed. Approximately 849 tons of soil containing non-friable asbestos material (transite), 120 tons of soil contaminated with barium and lead classified as hazardous waste, and 44 tons of soil classified as non-hazardous "special waste" were removed from SWMU-26/08D. The asbestos-containing material was loaded into trucks and transported to the Southside Landfill in Indianapolis, Indiana. The hazardous and "special" wastes were transported to Heritage Environmental Services in Indianapolis, Indiana. Twenty-five progress and confirmation samples were obtained in 1996 at the locations shown in Figure 4. Review of the analytical results for these samples shows that material remaining in the excavation is below the target cleanup levels, with the exception of arsenic and cobalt. The concentration of these compounds remaining in the soil are comparable to natural background levels. The site was restored and graded in Fall, 1996. Minimal backfilling was required due to the entire area being excavated down to bedrock. Therefore, soil erosion was not a concern and revegetation was not required.

The *Draft Interim Measures Report (IMR), SWMU -26/08D, Highway 58 Dump Site B, NSWC Crane, Indiana*, [MK, 1997], is a complete report of the IM activities.

2.0 IDENTIFICATION OF CONTAMINATED MEDIA

All contaminated soil and associated debris have been removed from SWMU 26/08D [MK, 1997]. The primary source of contamination at SWMU 26/08D prior to remediation was the material disposed of in Dump Site B. The primary source contaminated the soil (secondary source) in and around the dump site. Visual inspection of Highway 58 Dump Site B revealed scattered debris consisting of paper,





LEGEND

- MANHOLE
- SAMPLES
- GUARD POST
- SIGN

Special Waste Area = 1847 SQ FT.

Hazardous Waste Area = 3635 SQ FT.

SOURCE: MSE CORPORATION, 1996

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES

SWMU-26/08D
DUMP SITE B
NSWC CRANE
CRANE, INDIANA

FIGURE 4
SAMPLE LOCATIONS

DWG DATE: 6/28/00

DWG NAME: CRANE

cardboard containers, styrofoam, plastics, glass, scrap metal, containers, drums, cinder block fragments, corrugated pipe, and transite siding. Approximately 849 tons of soil containing non-friable asbestos material (transite), 120 tons of soil contaminated with barium and lead classified as hazardous waste, and 44 tons of soil classified as non-hazardous special waste were removed from SWMU-26/08D. All contaminated soil and associated debris were removed from the site. Furthermore, all soils above the target cleanup goals were been removed from the site and properly disposed of, therefore, soil to surface water cross-media contamination is not likely at the remediated SWMU. Groundwater quality has not been determined as of this submittal, and will be evaluated at a later date.

3.0 IDENTIFICATION OF CONTAMINANTS OF CONCERN

Soil sample analyses were performed following U.S. EPA SW-846 [U.S. EPA, 1996] methodologies. Sample locations are shown in Figure 4. Initial and supplemental characterization samples were analyzed for Title 40 Code of Federal Regulations (CFR) 264, Appendix IX analytes, hazardous constituents, RCRA characteristics, and asbestos. Results indicated the presence of antimony, arsenic, barium, beryllium, cobalt, lead and asbestos above the target cleanup levels. The target cleanup levels for these interim measures were taken from the *RCRA Corrective Action Guidance Human Data Quality Levels for RFI Projects*, June 18, 1994 [U.S. EPA, 1994]. Additional metallic and organic constituents listed in 40 CFR 261 Appendix VIII were detected above the target cleanup levels, such as arsenic at 14.6 milligrams per kilogram (mg/kg), beryllium at 0.88 mg/kg, cobalt at 3.5 mg/kg as well as benzo[b]fluoranthene (810 mg/kg), benzo[k]fluoranthene (710 mg/kg), benzo[a]pyrene (680 mg/kg), dibenz[a,h]anthracene (170 mg/kg), and benzo[g,h,i]perylene (870 mg/kg). Table 1 summarizes all analytes from the characterization samples.

Progress samples were analyzed for similar compounds and confirmation samples were analyzed for barium and lead to verify that contaminants were removed to below cleanup levels. Tables 1, 2 and 3 provide a comparison of conditions at the site prior to, during, and following remedial actions taken during the interim measures activities. Arsenic, beryllium, and cobalt, were detected in the progress samples above cleanup levels at concentrations as high as 14.2 mg/kg, 0.920 mg/kg, and 12.7 mg/kg, respectively. However, high levels are not uncommon in undisturbed soils in the area. Table 4 summarizes the results of background samples collected from the on-site borrow pit, off-site virgin soil borrow sources, and the topsoil from the Biofacility construction area, confirming that concentrations of these compounds above established interim measures cleanup levels are naturally present in soils in the surrounding area. Analytical results of the progress sampling also indicated that soil containing elevated levels of asbestos, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, dibenz[a,h]anthracene, and benzo[g,h,i]perylene are not present in levels above the cleanup goals in the remaining soil. The primary contaminants of concern following the removal of asbestos-containing material were barium and lead. Analytical results of the confirmation samples indicate that the remaining soil contains levels of barium and lead below the cleanup goals.

4.0 CURRENT CONDITIONS

SWMU 28/08D, Highway 58 Dump Site B is located in the central portion of NSWC Crane, as shown in Figure 3. The former disposal area, covering approximately 160 feet by 43 feet, is located at the bottom of a stone cliff. The surrounding area is heavily wooded with underbrush and a thick layer of leaves covering the ground. SWMU 26/08D currently is exposed bedrock with a covering of leaves and brush piles. All contaminated soil and debris has been removed from the site. Remediation of SWMU 26/08D involved excavating the soil to bedrock, removing the soil, and disposing of it at off-site disposal areas. The area was not revegetated because soil erosion was not a concern. Areas immediately surrounding the site that were disturbed by the remedial excavation were backfilled and graded as needed, and brush piles relocated as needed to provide ground cover. Little or no potential for exposure to

TABLE 1
SWMU 26/08D CHARACTERIZATION SAMPLE ANALYTICAL RESULTS SUMMARY

Compound	Interim Measures Cleanup Level mg/kg	Sample ID Sample Date Medium	26/08D-001 7/18/95 SOIL		26/08D-001RE 7/18/95 SOIL		26/08D-002 7/18/95 SOIL		26/08D-003 11/15/96 SOIL		26/08D-004 11/15/96 SOIL		26/08D-005 11/15/96 SOIL		26/08D-003A 12/15/95 SOIL		26/08D-003ARE 12/15/95 SOIL		26/08D-004A 12/15/95 SOIL		26/08D-004ARE 12/15/95 SOIL		26/08D-005A 12/15/95 SOIL		26/08D-006 2/8/96 SOIL	
TOTALS RESULTS																										
Methylene Chloride	22	mg/kg	0.075		0.1	B	0.014		N/A		N/A		N/A		0.012		0.05		0.029		N/A		0.013		N/A	
Acetone	230	mg/kg	<0.12		<0.12		0.0068	JB	N/A		N/A		N/A		<0.12		<0.12		<0.13		N/A		<0.13		N/A	
Tetrachloroethene	22	mg/kg	<0.0059		<0.0059		<0.0057		<0.05		<0.05		<0.05		0.0087		0.028		0.007		N/A		0.0084		N/A	
Toluene	280	mg/kg	<0.0059		<0.0059		<0.0057		N/A		N/A		N/A		<0.0062		0.0065		0.0031	J	N/A		<0.0065		N/A	
Naphthalene	80	mg/kg	100	J	N/A		0.078	J	N/A		N/A		N/A		<0.4		N/A		0.055	J	0.056	J	<2.2		N/A	
Acenaphthylene	36	mg/kg	<0.34		N/A		<0.33		N/A		N/A		N/A		<0.4		N/A		0.11	J	0.076	J	<2.2		N/A	
2-Methylnaphthalene	0.66	mg/kg	0.06	J	N/A		0.076	J	N/A		N/A		N/A		<0.4		N/A		<0.43		<0.43		<2.2		N/A	
Dibenzofuran	0.66	mg/kg	0.041	J	N/A		<0.33		N/A		N/A		N/A		<0.4		N/A		<0.43		<0.43		<2.2		N/A	
Anthracene	1.9	mg/kg	0.035	J	N/A		<0.33		N/A		N/A		N/A		<0.4		N/A		0.086	J	0.097	J	<2.2		N/A	
Phenanthrene	0.66	mg/kg	0.25	J	N/A		0.058	J	N/A		N/A		N/A		0.27	J	N/A		0.29	J	0.29	J	<2.2		N/A	
Fluoranthene	1600	mg/kg	0.41		N/A		<0.33		N/A		N/A		N/A		0.21	J	N/A		0.71		0.86		<2.2		N/A	
Pyrene	1200	mg/kg	0.35		N/A		<0.33		N/A		N/A		N/A		0.25	J	N/A		1.5		1.1		<2.2		N/A	
Benzo[a]anthracene	0.66	mg/kg	0.31	J	N/A		<0.33		N/A		N/A		N/A		0.28	J	N/A		0.65		0.65		<2.2		N/A	
Chrysene	0.8	mg/kg	0.34	J	N/A		<0.33		N/A		N/A		N/A		0.39	J	N/A		0.62		0.68		<2.2		N/A	
Di-n-octylphthalene	780	mg/kg	<0.34		N/A		<0.33		N/A		N/A		N/A		<0.4		N/A		<0.43		0.12	J	<2.2		N/A	
Benzo[b]fluoranthene	0.66	mg/kg	0.33	J	N/A		<0.33		N/A		N/A		N/A		0.51		N/A		***0.780***		***0.810***		<2.2		N/A	
Benzo[k]fluoranthene	0.66	mg/kg	0.23	J	N/A		<0.33		N/A		N/A		N/A		0.34	J	N/A		***0.690***		***0.710***		<2.2		N/A	
Benzo[a]pyrene	0.66	mg/kg	0.28	J	N/A		<0.33		N/A		N/A		N/A		0.39	J	N/A		0.61		***0.680***		<2.2		N/A	
Indeno[1,2,3-cd]pyrene	1.2	mg/kg	0.2	J	N/A		<0.33		N/A		N/A		N/A		0.24	J	N/A		0.66		0.54		<2.2		N/A	
Dibenz[a,h]anthracene	0.12	mg/kg	***0.120***	J	N/A		<0.33		N/A		N/A		N/A		***0.170***	J	N/A		<0.43		<0.43		<2.2		N/A	
Benzo[g,h,i]perylene	0.66	mg/kg	0.22	J	N/A		<0.33		N/A		N/A		N/A		0.27	J	N/A		***0.870***		0.65		<2.2		N/A	
Antimony	31	mg/kg	***37.80***	N	N/A		<0.02		N/A		N/A		N/A		<2.5		N/A		6.1	N	N/A		***40.6***	N	N/A	
Arsenic	0.97	mg/kg	***14.1***		N/A		0.1		N/A		N/A		N/A		***7.2***	C	N/A		9.1	C	N/A		***14.6***	C	N/A	
Barium	5500	mg/kg	***51300***		N/A		73.6		N/A		N/A		N/A		3680	E	N/A		***22400***	E	N/A		***7030***	E	N/A	
Beryllium	0.4	mg/kg	***0.88***		N/A		0.01		N/A		N/A		N/A		***0.680***		N/A		***0.720***		N/A		***0.81***		N/A	
Cadmium	39	mg/kg	14.6	N	N/A		0.04	N	N/A		N/A		N/A		4.4	N	N/A		6.7	N	N/A		15.1	N	N/A	
Chromium	940	mg/kg	69.8	EN	N/A		0.35	EN	N/A		N/A		N/A		24	NC	N/A		54.4	NC	N/A		111	NC	N/A	
Cobalt	0.1	mg/kg	***1.2***		N/A		0.07		N/A		N/A		N/A		***3.5***		N/A		<63.4		N/A		***2.2***		N/A	
Copper	2900	mg/kg	756		N/A		0.85		N/A		N/A		N/A		118		N/A		260		N/A		821		N/A	
Lead	500	mg/kg	***7040***		N/A		2.8		N/A		N/A		N/A		142	EN	N/A		***765***	EN	N/A		***8670***	EN	N/A	
Mercury	23	mg/kg	0.27		N/A		0.11		N/A		N/A		N/A		<0.12		N/A		0.2		N/A		0.3		N/A	
Nickel	1600	mg/kg	55.9		N/A		0.37		N/A		N/A		N/A		31.4		N/A		39.2		N/A		62.5		N/A	
Selenium	390	mg/kg	<0.56		N/A		<0.01		N/A		N/A		N/A		<0.62		N/A		<0.58		N/A		<0.65		N/A	
Silver	390	mg/kg	2.4		N/A		<0.01		N/A		N/A		N/A		<0.95		N/A		<1.0		N/A		1.5		N/A	
Vanadium	550	mg/kg	39.6		N/A		0.18		N/A		N/A		N/A		16.2		N/A		18.5		N/A		15.8		N/A	
Zinc	23000	mg/kg	1370	E	N/A		2.7	E	N/A		N/A		N/A		212	EN	N/A		744	EN	N/A		1740	EN	N/A	
Tin	47000	mg/kg	911		N/A		<28.3		N/A		N/A		N/A		<24.7		N/A		89	N	N/A		4850	N	N/A	
Pronamide	2900	mg/kg	<0.0019		N/A		0.096	P	N/A		N/A		N/A		<0.05		N/A		<0.052		N/A		<0.106		N/A	
Tetraethyl dithiopyrophosphate	20	mg/kg	5.8	P	N/A		6.5		N/A		N/A		N/A		<4.99		N/A		<5.2		N/A		<10.77		N/A	
1,2,3,4,6,7,8,9-OCDD	Not Established	mg/kg	0.000873		N/A		0.00044		N/A		N/A		N/A		<0.0002		N/A		<0.000694		N/A		0.00087		N/A	
2,3,7,8-TCDF	Not Established	mg/kg	0.00013		N/A		<5.8E-5		N/A		N/A		N/A		<0.00014		N/A		<0.000185		N/A		<0.000203		N/A	
1,2,3,4,6,7,8-HpCDF	Not Established	mg/kg	0.000162		N/A		<7.6E-5		N/A		N/A		N/A		<0.00023		N/A		<0.000292		N/A		<0.000321		N/A	
Total Sulfide	Not Established	mg/kg	<47		N/A		46		<40		<40		<40		<62		N/A		77		N/A		<65		<500	
Total Cyanide	1600	mg/kg	<1.2		N/A		<1.2		<2		<2		<2		<1.2		N/A		<1.3		N/A		3.9		<250	

TABLE 1

SWMU 26/08D CHARACTERIZATION SAMPLE ANALYTICAL RESULTS SUMMARY

Compound	Interim Measures Cleanup Level mg/kg	Sample ID Sample Date Medium	26/08D-001 7/18/95 SOIL	26/08D-001RE 7/18/95 SOIL	26/08D-002 7/18/95 SOIL	26/08D-003 11/15/96 SOIL	26/08D-004 11/15/96 SOIL	26/08D-005 11/15/96 SOIL	26/08D-003A 12/15/95 SOIL	26/08D-003ARE 12/15/95 SOIL	26/08D-004A 12/15/95 SOIL	26/08D-004ARE 12/15/95 SOIL	26/08D-005A 12/15/95 SOIL	26/08D-006 2/8/96 SOIL	
TCLP RESULTS															
Barium	100	mg/L	N/A	N/A	N/A	***143**	***210**	86.2	***108**	N/A	***275**	N/A	69.2	63.4	
Cadmium	1	mg/L	N/A	N/A	N/A	<0.04	0.115	0.218	0.0356	N/A	0.0228	N/A	0.0851	0.0169	
Chromium	5	mg/L	N/A	N/A	N/A	<0.1	<0.1	<0.1	<0.01	N/A	<0.01	N/A	<0.01	0.0019	B
Lead	5	mg/L	N/A	N/A	N/A	0.118	***12.3**	***16.4**	0.0434	N/A	0.122	N/A	2	0.0628	
Selenium	1	mg/L	N/A	N/A	N/A	<0.02	<0.02	<0.02	<0.05	N/A	<0.005	N/A	<0.005	0.0068	
ASBESTOS RESULTS															
Total Asbestos	any detection		N/A	N/A	N/A	ND	ND	*1%	N/A	N/A	N/A	N/A	N/A	N/A	

Notes:

1. Centered and bold italic sample results with asterisk indicate a sample level above the Interim Measures Cleanup Level.
2. Flagcode explanations:
   - J: Estimated concentration below reporting limit.
   - B: (for Organic Analytes): Analyte also found in corresponding Blank sample(s).
   - P: Value from quantitation and confirmation columns differed by more than 25%. Data flagged and lower of two values reported.
   - C: (for metals): indicates laboratory duplicate analysis not within control limits.
   - B: (for metals): indicates a concentration below reporting limit.
   - E: (for metals): indicates an estimated value because of the presence of an interference.
   - N: (for metals): indicates spike sample recovery not within control limits.
3. N/A: indicates Not Analyzed
4. ND indicates asbestos was not detected.
5. All sample results not shown in this table are non-detects.
6. A trip blank (26/08D-TB8) was taken with samples 003A through 005A on 12/15/95. No volatile organics were detected in the trip blank.

TABLE 2
SWMU 26/08D PROGRESS SAMPLE ANALYTICAL RESULTS SUMMARY

Compound	Interim Measures Cleanup Level mg/kg	Sample ID Sample Date Medium	26/08D-007 3/12/96 SOIL		26/08D-008 3/12/96 SOIL		26/08D-009 3/12/96 SOIL		26/08D-010 3/12/96 SOIL		26/08D-011 3/12/96 SOIL		26/08D-012 3/12/96 SOIL		26/08D-013 3/12/96 SOIL		26/08D-014 3/12/96 SOIL	
TOTALS RESULTS																		
Methylene Chloride	22	mg/kg	0.007	JB	<0.01		0.009	JB	0.01	JB	0.012	B	0.016	B	<0.013		0.013	B
Acetone	230	mg/kg	0.01	JB	<0.01		0.01	JB	0.012	JB	0.012	B	0.027	B	<0.018		<0.012	
1,1,1-Trichloroethane	300	mg/kg	<0.011		<0.01		<0.012		<0.013		<0.012		<0.012		<0.013		<0.012	
Phenanthrene	0.66	mg/kg	<0.67		<0.64		<0.78		<0.82		<0.73		<0.73		<0.73		0.053	J
Benzo[a]anthracene	0.66	mg/kg	<0.71		<0.69		<0.82		<0.67		<0.78		<0.78		<0.84		0.11	J
Di-n-butylphthalate	3900	mg/kg	0.97		0.31	J	0.22	J	0.52	J	0.62	J	0.36	J	0.82	J	0.3	J
Fluoranthene	1600	mg/kg	<0.99		<0.96		<1.2		<1.2		<1.1		<1.1		<1.2		0.19	J
Pyrene	1200	mg/kg	<0.78		<0.76		<0.91		<0.96		<0.86		<0.86		<0.92		0.2	J
bis(2-ethylhexyl)Phthalate	61	mg/kg	<0.81		<0.78		<0.94		0.051	J	<0.88		0.11	J	0.045	J	0.052	J
Chrysene	0.8	mg/kg	<0.58		<0.56		<0.68		<0.71		<0.64		<0.64		<0.68		0.1	J
Benzo[b]fluoranthene	0.66	mg/kg	<0.83		<0.8		<0.96		<1.0		<0.9		<0.9		<0.97		0.19	JX
Benzo[k]fluoranthene	0.66	mg/kg	<0.67		<064		<0.78		<0.82		<0.73		<0.73		<0.78		0.2	JX
Indeno[1,2,3-cd]pyrene	1.2	mg/kg	<0.49		<0.98		<0.58		<0.6		<0.54		<0.54		<0.58		0.064	J
Benzo[g,h,i]perylene	0.66	mg/kg	<0.67		<0.64		<0.78		<0.82		<0.73		<0.73		<0.78		0.065	J
Antimony	31	mg/kg	<9.7		<9.4		0.65	BN	0.92	BN	2.2	BN	1.9	BN	0.7	BN	0.34	BN
Arsenic	0.97	mg/kg	<16.1		<15.7		***10.4***		***11.9***		***2.6***		***9.3***		***8.7***		***3.2***	
Barium	5500	mg/kg	37.1	BC	36.2	BC	***10300***	C	2710	C	722	C	1610	C	250	C	***7940***	C
Beryllium	0.4	mg/kg	<1.6		<1.6		***0.710***		***0.900***		***0.560***	B	***0.460***	B	***0.600***	B	***0.920***	
Cadmium	39	mg/kg	<1.1		<1.0		<0.02		<0.03		<0.52	BN	5.8	N	0.11	BN	0.23	BN
Chromium	940	mg/kg	7.6	BC	6.1	BC	13.7	C	10.8	C	9.5	C	10.6	C	8.8	C	10.8	C
Cobalt	0.1	mg/kg	<2.7		<2.6		***7.4***		***12.7***		***5.4***	B	***5.4***	B	***9***		***8.4***	
Copper	2900	mg/kg	10.3	BC	10.5	BC	25.7	C	20.8	C	47	C	76.6	C	16.6	C	27.5	C
Mercury	23	mg/kg	<0.1		<0.1		<0.11		<0.13		0.15		0.12		<0.12		<0.12	
Nickel	1600	mg/kg	17.7	B	19.9	B	22.7		33.4		15.7		27.9		23.2		29.3	
Lead	500	mg/kg	<8.6		<8.4		132	NC	26.2	NC	321	NC	***656***	NC	25.5	NC	69.9	NC
Selenium	390	mg/kg	<14		<13.6		0.87	N	0.61	BN	0.65	N	0.51	BN	0.9	N	0.33	BN
Silver	390	mg/kg	<3.8		<3.7		<0.09		<0.09		<0.08		<0.08		<0.09		<0.09	
Vanadium	550	mg/kg	7.6	B	5.6	B	7.2		12.8		5.1	B	9.3		11.9		6.8	
Zinc	23000	mg/kg	28.3	BNC	48.6	BNC	190	NC	126	NC	128	NC	315	NC	77.9	NC	78.9	NC
Tin	47000	mg/kg	<22.6		<22.0		11.3	C	2.7	BC	125000	C	24.2	C	1.4	BC	5.2	BC
2,4-D	390	mg/kg	<0.11		<0.1		0.0022	J	0.0027	JP	<0.12		<0.12		<0.13		<0.12	
2,4,5-TP	0.11	mg/kg	<0.028		<0.026		0.00011	JP	<0.033		<0.029		0.00088	JP	0.00036	JP	<0.31	
2,4,5-T	390	mg/kg	0.00087	JB	0.00045	JPB	0.00087	JPB	0.001	JPB	<0.029		0.0012	JPB	0.0033	JPB	0.00075	JPB
gamma-BHC	0.00268	mg/kg	0.00004	J	<0.001		<0.0012		<0.0013		<0.0012		0.00021	JP	<0.0013		0.000059	JP
Heptachlor	0.19	mg/kg	0.00016	J	<0.001		0.000041	JP	<0.0013		0.00005	JP	0.00064	J	0.00042	JP	<0.0012	
Aldrin	0.05	mg/kg	<0.0011		<0.001		0.00016	JP	0.00015	JP	0.00015	JP	0.00027	JP	0.00011	JP	0.000087	JP
Endosulfan I	2	mg/kg	<0.0016		<0.0016		0.000072	JP	<0.0014		0.000071	JP	0.000081	JP	0.00019	JP	0.00042	JP
Dieldrin	0.053	mg/kg	0.00006	JP	<0.0016		0.000086	JP	<0.0019		<0.0017		0.00016	JP	0.00011	J	0.000082	JP
Endosulfan II	2	mg/kg	0.000062	JP	<0.0036		0.00011	JP	<0.0045		<0.0041		<0.0041		0.00013	JP	0.00036	JP
4,4'-DDT	0.008	mg/kg	0.00022	JP	<0.0036		0.00045	JP	0.00019	JP	0.00017	JP	<0.0041		0.00012	JP	***0.016***	
Methoxychlor	200	mg/kg	0.00034	JPB	0.00017	JPB	0.0021	JPB	0.0006	JPB	0.0002	JPB	0.00094	JPB	0.0004	JPB	0.0081	PB
alpha-BHC	0.00201	mg/kg	<0.0011		<0.001		<0.0012		<0.000042		<0.0012		<0.0012		<0.0013		0.00011	JPB
beta-BHC	0.00402	mg/kg	<0.0011		<0.001		<0.0012		<0.0013		0.00013	JP	0.00048	JP	<0.0013		0.00031	JP
delta-BHC	0.00603	mg/kg	0.000086	JPB	0.00011	JPB	0.00089	JPB	0.00062	JPB	0.00011	JPB	0.000077	JPB	0.00027	JPB	0.00016	JPB
Heptachlor epoxide	0.094	mg/kg	<0.0011		<0.001		0.00005	JPB	0.000063	JPB	<0.0012		0.000064	JPB	0.000066	JPB	0.000091	JB
4,4'-DDE	2.5	mg/kg	0.00034	J	0.00039	JP	<0.0043		<0.0045		<0.0041		0.00013	JP	0.000079	JP	0.0022	JP
Endrin	12	mg/kg	<0.0027		<0.0026		0.000071	JPB	<0.0032		<0.0029		<0.0029		0.00021	JPB	0.0026	JPB

TABLE 2
SWMU 26/08D PROGRESS SAMPLE ANALYTICAL RESULTS SUMMARY

Compound	Interim Measures Cleanup Level mg/kg	Sample ID Sample Date Medium	26/08D-007 3/12/96 SOIL		26/08D-008 3/12/96 SOIL		26/08D-009 3/12/96 SOIL		26/08D-010 3/12/96 SOIL		26/08D-011 3/12/96 SOIL		26/08D-012 3/12/96 SOIL		26/08D-013 3/12/96 SOIL		26/08D-014 3/12/96 SOIL	
TOTALS RESULTS																		
4,4'-DDD	3.5	mg/kg	0.00012	JPB	<0.0036		<0.0043		<0.0045		0.000076	JPB	0.00034	JPB	0.000077	JPB	0.026	JPB
Endrin aldehyde	0.0154	mg/kg	<0.0011		0.00013	JB	0.00018	JPB	<0.0013		0.00013	JPB	0.0006	JPB	0.00031	JPB	0.0008	JPB
Endosulfan sulfate	0.0442	mg/kg	0.000087	JB	0.00019	JPB	<0.0024		0.0002	JPB	<0.0023		0.00011	JPB	0.00034	JB	0.00044	JPB
Aroclor-1254	0.11	mg/kg	<0.021		<0.021		<0.0024		<0.026		<0.023		<0.024		<0.025		<0.025	
Dimethoate	7.8	mg/kg	0.016	PB	0.006	JPB	<0.012		<0.013		<0.012		<0.012		<0.013		<0.012	
Methyl-Parathion	0.02	mg/kg	<0.011		0.0062	JP	<0.012		0.0086	JP	<0.012		<0.012		<0.013		<0.012	
Famphur	Not Established	mg/kg	<0.011		<0.01		<0.012		0.022	P	<0.012		<0.012		<0.013		<0.012	
Phorate	7.8	mg/kg	<0.011		<0.01		<0.62		<0.013		<0.012		<0.012		<0.013		<0.012	
Cyanide	1600	mg/kg	<0.54		<0.52		<0.62		<0.66		<0.59		<0.59		<0.63		<0.63	
TCLP RESULTS																		
Barium	100	mg/L	N/A		N/A		13.04		8.11		10.7		2.5		2.37		***412***	
Cadmium	1	mg/L	N/A		N/A		0.0019	B	ND		0.0131		0.0453		0.00074	B	0.0049	B
Chromium	5	mg/L	N/A		N/A		0.0015	B	ND		0.00099	B	ND		0.00099	B	0.0023	B
Lead	5	mg/L	N/A		N/A		0.0573		0.0025	B	0.0727		0.0494		0.003		0.0101	
Selenium	1	mg/L	N/A		N/A		0.005		0.0053		0.0079		0.0105		0.0062		0.0055	
ASBESTOS RESULTS																		
Total Asbestos	any detection		ND		ND		ND		ND		ND		ND		ND		ND	

Notes:

1. Centered and bold italic sample results indicate a sample level above the Interim Measures Cleanup Level.
2. Flagcode explanations:
   - J: Estimated concentration below reporting limit.
   - B: (for Organic Analytes): Analyte also found in corresponding Blank sample(s).
   - P: Value from quantitation and confirmation columns differed by more than 25%. Data flagged and lower of two values reported.
   - C: (for metals): indicates laboratory duplicate analysis not within control limits.
   - B: (for metals): indicates a concentration below reporting limit.
   - E: (for metals): indicates an estimated value because of the presence of an interference.
   - N: (for metals): indicates spike sample recovery not within control limits.
3. N/A: indicates Not Analyzed
4. ND indicates asbestos was not detected.
5. A trip blank (26/08D-TB8) was taken with samples 003A through 005A on 12/15/95. No volatile organics were detected in the trip blank.

TABLE 2
SWMU 26/08D PROGRESS SAMPLE ANALYTICAL RESULTS SUMMARY

Compound	Interim Measures Cleanup Level mg/kg	Sample ID Sample Date Medium	26/08D-015 3/12/96 SOIL		26/08D-016 3/12/96 SOIL		26/08D-017 3/12/96 SOIL		26/08D-018 3/12/96 SOIL		26/08D-019 3/12/96 SOIL		26/08D-020 3/12/96 SOIL		26/08D-009A 4/11/96 SOIL		26/08D-014A 4/11/96 SOIL		26/08D-015A 4/11/96 SOIL	
TOTALS RESULTS																				
Methylene Chloride	22	mg/kg	0.011	B	0.014	B	0.01	BJ	0.01	JB	0.008	JB	0.015	B	N/A		N/A		N/A	
Acetone	230	mg/kg	0.01	JB	<0.012		<0.011		0.012	B	0.007	JB	0.012	B	N/A		N/A		N/A	
1,1,1-Trichloroethane	300	mg/kg	<0.11		<0.012		<0.011		0.002	J	<0.012		<0.012		N/A		N/A		N/A	
Phenanthrene	0.66	mg/kg	0.17	J	<0.73		<0.69		<0.73		<0.74		<0.73		N/A		N/A		N/A	
Benzo[a]anthracene	0.66	mg/kg	0.08	J	0.048	J	<0.73		<0.78		<0.78		<0.78		N/A		N/A		N/A	
Di-n-butylphthalate	3900	mg/kg	0.36	J	0.66	J	0.38	J	0.47	J	0.51	J	0.83	J	N/A		N/A		N/A	
Fluoranthene	1600	mg/kg	0.18	J	0.075	J	<1.0		<1.1		<1.1		<1.1		N/A		N/A		N/A	
Pyrene	1200	mg/kg	0.18	J	0.083	J	<0.81		<0.86		<0.87		<0.86		N/A		N/A		N/A	
bis(2-ethylhexyl)Phthalate	61	mg/kg	<0.85		0.34	J	0.038	J	<0.88		0.56	J	<0.88		N/A		N/A		N/A	
Chrysene	0.8	mg/kg	0.089	J	0.049	J	<0.6		<0.64		<0.64		<0.64		N/A		N/A		N/A	
Benzo[b]fluoranthene	0.66	mg/kg	0.14	JX	0.11	JX	0.04	XJ	<0.90		<0.92		<0.9		N/A		N/A		N/A	
Benzo[k]fluoranthene	0.66	mg/kg	0.15	JX	0.12	JX	0.036	JX	<0.73		<0.74		<0.73		N/A		N/A		N/A	
Indeno[1,2,3-cd]pyrene	1.2	mg/kg	0.041	J	<0.54		<0.51		<0.54		<0.55		<0.54		N/A		N/A		N/A	
Benzo[g,h,i]perylene	0.66	mg/kg	0.045	J	<0.73		<0.64		<0.73		<0.74		<0.73		N/A		N/A		N/A	
Antimony	31	mg/kg	7.4	N	*41.5*	N	6.9	N	<0.21		1.1	BN	<0.21		N/A		N/A		N/A	
Arsenic	0.97	mg/kg	*9.7*		*1.40*		*6.5*		*6.1*		*10.1*		*3.9*		N/A		N/A		N/A	
Barium	5500	mg/kg	*14000*	C	*10100*	C	2300	C	1310	C	*7350*	C	1320	C	N/A		N/A		N/A	
Beryllium	0.4	mg/kg	*0.440*	B	*0.410*	B	*0.410*	B	0.35	B	*0.660*		*0.470*	B	N/A		N/A		N/A	
Cadmium	39	mg/kg	5	N	4.6	N	2.6	N	<0.02		1.3	N	<0.02		N/A		N/A		N/A	
Chromium	940	mg/kg	18.8	C	21.5	C	13.4	C	5.3	C	12	C	8.1	C	N/A		N/A		N/A	
Cobalt	0.1	mg/kg	*4.9*	B	*3.8*	B	*4.4*	B	*10.6*		*5.3*	B	*4.6*	B	N/A		N/A		N/A	
Copper	2900	mg/kg	156	C	284	C	124	C	8.4	C	28.5	C	9	C	N/A		N/A		N/A	
Mercury	23	mg/kg	0.19		0.21		<0.09		<0.11		0.11		<0.12		N/A		N/A		N/A	
Nickel	1600	mg/kg	2.7		32.6		22.7		28		25.1		20.8		N/A		N/A		N/A	
Lead	500	mg/kg	*987*	NC	*2740*	NC	*680*	NC	12.5	NC	49.5	NC	15.9	NC	N/A		N/A		N/A	
Selenium	390	mg/kg	0.5	BN	0.34	BN	0.43	BN	0.54	BN	0.38	BN	<0.31		N/A		N/A		N/A	
Silver	390	mg/kg	0.6	B	1.9		0.44	B	<0.08		<0.08		<0.08		N/A		N/A		N/A	
Vanadium	550	mg/kg	8		8.3		6.9		5.9		17.4		6.8		N/A		N/A		N/A	
Zinc	23000	mg/kg	724	NC	962	NC	303	NC	15.5	NC	99.1	NC	38.1	NC	N/A		N/A		N/A	
Tin	47000	mg/kg	232	C	532	C	482	C	<0.49		4.3	BC	4	BC	N/A		N/A		N/A	
2,4-D	390	mg/kg	<0.11		<0.12		<0.11		<0.12		<0.12		<0.12		N/A		N/A		N/A	
2,4,5-TP	0.11	mg/kg	<0.028		0.00039	JP	0.00035	JP	0.000098	JP	<0.03		0.00054	JP	N/A		N/A		N/A	
2,4,5-T	390	mg/kg	0.00093	JB	<0.029		0.00057	JPB	0.00093	JPB	0.00052	JPB	<0.029		N/A		N/A		N/A	
gamma-BHC	0.00268	mg/kg	<0.0011		0.00014	JP	0.000033	JP	0.000059	JP	<0.0012		<0.0011		N/A		N/A		N/A	
Heptachlor	0.19	mg/kg	<0.0011		0.00029	JP	0.00008	JP	0.00012	J	<0.0012		<0.0011		N/A		N/A		N/A	
Aldrin	0.05	mg/kg	0.000051	J	0.00029	J	0.00023	JP	0.000045	JP	<0.0012		<0.0011		N/A		N/A		N/A	
Endosulfan I	2	mg/kg	0.000052	JP	0.0011	J	0.000078	JP	<0.0017		<0.0018		<0.0012		N/A		N/A		N/A	
Dieldrin	0.053	mg/kg	0.00015	JP	<0.0018		0.00016	JP	<0.0017		0.000055	JP	0.00016	JP	N/A		N/A		N/A	
Endosulfan II	2	mg/kg	<0.004		0.00027	JP	0.00026	JP	<0.0041		0.00012	JP	<0.004		N/A		N/A		N/A	
4,4'-DDT	0.008	mg/kg	0.003	J	0.00023	JP	0.0026	JP	<0.0041		0.00027	JP	0.00067	JP	N/A		N/A		N/A	
Methoxychlor	200	mg/kg	0.0044	PB	0.00071	JPB	0.0094	B	0.0014	JPB	0.00059	JPB	<0.004		N/A		N/A		N/A	
alpha-BHC	0.00201	mg/kg	0.00017	JB	0.000074	JPB	0.00018	JB	0.000041	JPB	<0.0012		<0.0011		N/A		N/A		N/A	
beta-BHC	0.00402	mg/kg	0.00016	JP	0.00017	JP	0.00087	JP	<0.0012		<0.0012		<0.0011		N/A		N/A		N/A	
delta-BHC	0.00603	mg/kg	0.00058	JPB	0.00012	JPB	0.00071	JPB	0.000078	JPB	<0.0012		<0.0011		N/A		N/A		N/A	
Heptachlor epoxide	0.094	mg/kg	0.000072	JPB	0.000086	JPB	0.00015	JPB	<0.0012		0.000072	JPB	0.0002	JB	N/A		N/A		N/A	
4,4'-DDE	2.5	mg/kg	0.00031	JP	0.000066	JP	0.000099	JP	<0.0041		0.000075	JP	<0.004		N/A		N/A		N/A	
Endrin	12	mg/kg	<0.0028		<0.0029		0.00013	JPB	<0.0029		0.00019	JPB	<0.0029		N/A		N/A		N/A	

TABLE 2
SWMU 26/08D PROGRESS SAMPLE ANALYTICAL RESULTS SUMMARY

Compound	Interim Measures Cleanup Level mg/kg	Sample ID Sample Date Medium	26/08D-015 3/12/96 SOIL		26/08D-016 3/12/96 SOIL		26/08D-017 3/12/96 SOIL		26/08D-018 3/12/96 SOIL		26/08D-019 3/12/96 SOIL		26/08D-020 3/12/96 SOIL		26/08D-009A 4/11/96 SOIL		26/08D-014A 4/11/96 SOIL		26/08D-015A 4/11/96 SOIL	
TOTALS RESULTS																				
4,4'-DDD	3.5	mg/kg	0.00052	JP	<0.0041		0.0017	JPB	<0.0041		<0.0041		0.00037	JPB	N/A		N/A		N/A	
Endrin aldehyde	0.0154	mg/kg	0.00088	JPB	0.0004	JPB	0.0013	PB	<0.0012		0.00033	JPB	0.0029	B	N/A		N/A		N/A	
Endosulfan sulfate	0.0442	mg/kg	0.000084	JPB	0.00023	JPB	0.00067	JPB	<0.0023		<0.0023		<0.0023		N/A		N/A		N/A	
Aroclor-1254	0.11	mg/kg	<0.0023		0.069	P	<0.022		<0.023		<0.023		<0.023		N/A		N/A		N/A	
Dimethoate	7.8	mg/kg	0.018	PB	<0.012		<0.011		0.036	PB	0.039	PB	0.02	PB	N/A		N/A		N/A	
Methyl-Parathion	0.02	mg/kg	<0.011		<0.012		<0.011		0.014	P	***0.026***	PB	<0.012		N/A		N/A		N/A	
Famphur	Not Established	mg/kg	0.022	PB	<0.012		<0.011		0.028	P	<0.012		<0.012		N/A		N/A		N/A	
Phorate	7.8	mg/kg	<0.011		<0.012		<0.011		<0.012		<0.012		0.024	P	N/A		N/A		N/A	
Cyanide	1600	mg/kg	<0.57		0.61		<0.56		<0.59		<0.59		<0.59		N/A		N/A		N/A	
TCLP RESULTS																				
Barium	100	mg/L	***137***		***102***		19.9		51.1		***115.1***		<50		0.663		0.104	B	0.0807	B
Cadmium	1	mg/L	0.0073		0.0079		0.0055		<0.5		<0.5		<0.5		<0.0005		<0.0005		<0.0005	
Chromium	5	mg/L	0.0012	B	<0.90		0.0014	B	<2.5		<2.5		<2.5		0.0019	B	0.003	B	0.0044	B
Lead	5	mg/L	0.692		0.101		0.378		<2.5		<2.5		<2.5		0.0115		0.113		0.0045	
Selenium	1	mg/L	0.0032	B	0.0036	B	ND		<0.5		<0.5		<0.5		0.0068		<0.0029		0.0037	B
ASBESTOS RESULTS																				
Total Asbestos	any detection		ND		ND		ND		ND		ND		ND		N/A		N/A		N/A	

Notes:

1. Centered and bold italic sample results indicate a sample level above the Interim Measures Cleanup Level.
2. Flagcode explanations:
   - J: Estimated concentration below reporting limit.
   - B: (for Organic Analytes): Analyte also found in corresponding Blank sample(s).
   - P: Value from quantitation and confirmation columns differed by more than 25%. Data flagged and lower of two values reported.
   - *: (for metals): indicates laboratory duplicate analysis not within control limits.
   - B: (for metals): indicates a concentration below reporting limit.
   - E: (for metals): indicates an estimated value because of the presence of an interference.
   - N: (for metals): indicates spike sample recovery not within control limits.
3. N/A: indicates Not Analyzed
4. ND indicates asbestos was not detected.
5. A trip blank (26/08D-TB8) was taken with samples 003A through 005A on 12/15/95. No volatile organics were detected in the trip blank.

TABLE 2

SWMU 26/08D PROGRESS SAMPLE ANALYTICAL RESULTS SUMMARY

Compound	Interim Measures Cleanup Level mg/kg	Sample ID Sample Date Medium	26/08D-016A 4/11/96 SOIL		26/08D-017A 4/11/96 SOIL	
TOTALS RESULTS						
Methylene Chloride	22	mg/kg	N/A		N/A	
Acetone	230	mg/kg	N/A		N/A	
1,1,1-Trichloroethane	300	mg/kg	N/A		N/A	
Phenanthrene	0.66	mg/kg	N/A		N/A	
Benzo[a]anthracene	0.66	mg/kg	N/A		N/A	
Di-n-butylphthalate	3900	mg/kg	N/A		N/A	
Fluoranthene	1600	mg/kg	N/A		N/A	
Pyrene	1200	mg/kg	N/A		N/A	
bis(2-ethylhexyl)Phthalate	61	mg/kg	N/A		N/A	
Chrysene	0.8	mg/kg	N/A		N/A	
Benzo[b]fluoranthene	0.66	mg/kg	N/A		N/A	
Benzo[k]fluoranthene	0.66	mg/kg	N/A		N/A	
Indeno[1,2,3-cd]pyrene	1.2	mg/kg	N/A		N/A	
Benzo[g,h,i]perylene	0.66	mg/kg	N/A		N/A	
Antimony	31	mg/kg	N/A		N/A	
Arsenic	0.97	mg/kg	N/A		N/A	
Barium	5500	mg/kg	N/A		N/A	
Beryllium	0.4	mg/kg	N/A		N/A	
Cadmium	39	mg/kg	N/A		N/A	
Chromium	940	mg/kg	N/A		N/A	
Cobalt	0.1	mg/kg	N/A		N/A	
Copper	2900	mg/kg	N/A		N/A	
Mercury	23	mg/kg	N/A		N/A	
Nickel	1600	mg/kg	N/A		N/A	
Lead	500	mg/kg	N/A		N/A	
Selenium	390	mg/kg	N/A		N/A	
Silver	390	mg/kg	N/A		N/A	
Vanadium	550	mg/kg	N/A		N/A	
Zinc	23000	mg/kg	N/A		N/A	
Tin	47000	mg/kg	N/A		N/A	
2,4-D	390	mg/kg	N/A		N/A	
2,4,5-TP	0.11	mg/kg	N/A		N/A	
2,4,5-T	390	mg/kg	N/A		N/A	
gamma-BHC	0.00268	mg/kg	N/A		N/A	
Heptachlor	0.19	mg/kg	N/A		N/A	
Aldrin	0.05	mg/kg	N/A		N/A	
Endosulfan I	2	mg/kg	N/A		N/A	
Dieldrin	0.053	mg/kg	N/A		N/A	
Endosulfan II	2	mg/kg	N/A		N/A	
4,4'-DDT	0.008	mg/kg	N/A		N/A	
Methoxychlor	200	mg/kg	N/A		N/A	
alpha-BHC	0.00201	mg/kg	N/A		N/A	
beta-BHC	0.00402	mg/kg	N/A		N/A	
delta-BHC	0.00603	mg/kg	N/A		N/A	
Heptachlor epoxide	0.094	mg/kg	N/A		N/A	
4,4'-DDE	2.5	mg/kg	N/A		N/A	
Endrin	12	mg/kg	N/A		N/A	

TABLE 2

SWMU 26/08D PROGRESS SAMPLE ANALYTICAL RESULTS SUMMARY

Compound	Interim Measures Cleanup Level mg/kg	Sample ID Sample Date Medium	26/08D-016A 4/11/96 SOIL		26/08D-017A 4/11/96 SOIL	
TOTALS RESULTS						
4,4'-DDD	3.5	mg/kg	N/A		N/A	
Endrin aldehyde	0.0154	mg/kg	N/A		N/A	
Endosulfan sulfate	0.0442	mg/kg	N/A		N/A	
Aroclor-1254	0.11	mg/kg	N/A		N/A	
Dimethoate	7.8	mg/kg	N/A		N/A	
Methyl-Parathion	0.02	mg/kg	N/A		N/A	
Famphur	Not Established	mg/kg	N/A		N/A	
Phorate	7.8	mg/kg	N/A		N/A	
Cyanide	1600	mg/kg	N/A		N/A	
TCLP RESULTS						
Barium	100	mg/L	0.0173	B	0.0783	B
Cadmium	1	mg/L	<0.0005		0.0007	B
Chromium	5	mg/L	0.0052	B	0.004	B
Lead	5	mg/L	0.0147		0.12	
Selenium	1	mg/L	0.0042	B	0.0095	
ASBESTOS RESULTS						
Total Asbestos	any detection		N/A		N/A	

Notes:

1. Centered and bold italic sample results indicate a sample level above the Interim Measures Cleanup Level.
2. Flagcode explanations:
   - J: Estimated concentration below reporting limit.
   - B: (for Organic Analytes): Analyte also found in corresponding Blank sample(s).
   - P: Value from quantitation and confirmation columns differed by more than 25%. Data flagged and lower of two values reported.
   - *: (for metals): indicates laboratory duplicate analysis not within control limits.
   - B: (for metals): indicates a concentration below reporting limit.
   - E: (for metals): indicates an estimated value because of the presence of an interference.
   - N: (for metals): indicates spike sample recovery not within control limits.
3. N/A: indicates Not Analyzed
4. ND indicates asbestos was not detected.
5. A trip blank (26/08D-TB8) was taken with samples 003A through 005A on 12/15/95. No volatile organics were detected in the trip blank.

TABLE 3
SWMU 26/08D CONFIRMATION SAMPLE ANALYTICAL RESULTS SUMMARY

			CONFIRMATION SAMPLES											
Compound	Interim Measures Cleanup Level ug/kg	Sample ID Sample Date Medium	26/08D-018 9/3/96 SOIL		26/08D-019 9/3/96 SOIL		26/08D-020 9/3/96 SOIL		26/08D-021 9/3/96 SOIL		26/08D-022 9/3/96 SOIL		26/08D-023 9/3/96 SOIL	
TOTALS RESULTS														
Barium	5500	mg/kg	201		679		82.9		273		4510		3310	
Lead	500	mg/kg	12.8	E	280	E	9.4	E	4.2	E	12.6	E	253	E

Note:

E: (for metals): indicates an estimated value because of the presence of an interference.

TABLE 4
BACKGROUND AND BORROW PIT ANALYTICAL RESULTS

Interim Measures			Antimony		Arsenic		Barium		Beryllium		Chromium		Cobalt		Copper		Lead		Lithium		Nickel		Selenium		Tin		Vanadium		Zinc	
Cleanup Level (mg/kg)	Date		31		0.97		5500		0.4		940		0.1		2900		500		1600		1600		390		47000		550		23000	
NSWC-BP/BF-001	3/16/95	mg/kg	<2.6		***9.4***		62.4		***0.570***		15.8		***3.9***		15.3		13.8		12.8		10		<0.65		<32.4		31.2		39.5	
NSWC-BP/BF-002	3/16/95	mg/kg	<2.4		***9***		65.1		***0.560***		16.9		***4.6***		16.1		14.9		11.7		10.8		<0.60		<30.0		30.8		41.9	
NSWC-BP/BF-003	10/12/95	mg/kg	<2.3		***7.8***	NC	92.1		***0.740***		22.1		***8.6***		15.1		14.2	NC	14.9		14.5		<0.57		<22.7		39		40.8	
NSWC-BP/BF-004	10/12/95	mg/kg	<2.2		***6.3***	NC	83.9		***0.810***		22.8		***7***		13.9		13.7	NC	14.7		13.5		<0.53		<22.2		38.2		40.1	
NSWC-BP/BF-005	10/27/95	mg/kg	<2.1		***1.9***	N	20.6		<0.21		4.6	N	***2.4***		4.3	E	3.5	E	NR		6.2		<0.53		<21.2		7.3		16	EN
NSWC-BP/BF-006	10/27/95	mg/kg	<2.2		***1.8***	N	26.7		<0.22		5.6	N	***3.2***		4.8	E	3.9	E	NR		6.6		<0.56		<21.5		8.6		17.7	EN
NSWC-BIOF001	3/7/96	mg/kg	0.410	BN	***9.2***		86.3		***0.627***	B	17.7		***9.2***		14.6		15.9		7.44	B	11.1		1.06	N	1.73	B	30.2		34	
NSWC-BIOF002	3/7/96	mg/kg	0.303	BN	***6.21***		82		***0.557***	B	11.1		***10.7***		9.19		16.2		4.69	B	8.54		1.21	N	1.39	B	20.1		24.3	
NSWC-BIOF003	3/7/96	mg/kg	0.363	BN	***8.2***		61.2		***0.417***	B	15.9		***10.8***		9.91		13.5		6.96	B	9.5		1.06	N	1.31	B	27.1		27	
NSWC-BIOF004	3/7/96	mg/kg	0.335	BN	***4.95***		123		***0.729***	B	10.4		***9.89***		10.3		16.7		4.73	B	9.86		0.733	BN	1.06	B	18.3		27	
NSWC-BIOF005	3/7/96	mg/kg	0.346	BN	***7.43***		105		***0.602***	B	12.1		***8.69***		10.9		16.3		5.82	B	9.05		0.985	N	0.888	B	24.1		29.7	
NSWC-BIOF006	3/7/96	mg/kg	<0.248		***5.88***		89.2		***0.642***	B	11.3		***10.3***		10.4		16.5		5.1	B	9.41		0.816	N	1.41	B	20.9		25.8	
NSWC-BIOF007	3/7/96	mg/kg	0.448	BN	***11.4***		58.3		***0.546***	B	17.7		***6.37***	B	15.4		16.4		8.73	B	10.9		1.31	N	1.45	B	32		35.7	
NSWC-BIOF008	3/7/96	mg/kg	<0.239		***6.13***		91.9		***0.648***	B	11.4		***11.1***		10.4		17		6.22	B	10.5		0.943	N	1.35	B	22.3		29.9	
NSWC-BIOF009	3/7/96	mg/kg	<0.267		***2.96***		83.5		***0.540***	B	9.49		***4.86***	B	10.5		13.2		6.03	B	8.99		<0.386		2.14	B	17.2		39.7	
NSWC-BIOF010	3/7/96	mg/kg	0.233	BN	***5.26***		46.7		***0.478***	B	12.4		***8.08***		7.12		13.7		4.43	B	7.24		0.855	N	1.25	B	20.9		20.6	
NSWC-BIOF011	3/7/96	mg/kg	0.610	BN	***6.87***		73		***0.542***	B	38.3		***9.18***		16		15.2		45.2		193		1.43	N	1.83	B	24.2		38.7	
NSWC-BIOF012	3/7/96	mg/kg	0.491	BN	***6.73***		54.6		***0.459***	B	17.6		***12.6***		11.2		14.5		7.94	B	21.1		0.938	N	1.51	B	23.5		31.3	
NSWC-BIOF013	3/7/96	mg/kg	0.383	BN	***2.88***		51.6		***0.454***	B	9.36		***7.82***		8.51		7.38		5.58	B	10.6		0.572	BN	0.897	B	14.2		25.3	
NSWC-BIOF014	3/7/96	mg/kg	<0.228		***2.58***		62.7		***0.623***	B	9.48		***12.1***		10.4		7.72		6.52	B	17.9		0.554	BN	1.19	B	13.2		36.1	

Notes:

1. Bold italic sample results with asterisk indicate a sample level above the Interim Measures Cleanup Level.
2. Analytical results are for metals only. No other analytes were present at levels near or above interim Cleanup Levels Criteria.

Flagging codes:

C: (for metals): indicates laboratory duplicate analysis not within control limits.
B: (for metals): indicates a concentration below reporting limit.
E: (for metals): indicates an estimated value because of the presence of an interference.
N: (for metals): indicates spike sample recovery not within control limits.

contamination exists in this area as the contaminated soils have been removed from the site. The results of confirmation sampling, and backfill sampling are provided in Tables 3 and 4.

5.0 CURRENT AND FUTURE LAND USES

The area surrounding the SWMU is heavily forested. The excavated area is not forested, and is exposed bedrock. The site is currently being used as a habitat for the local wildlife. It is not currently being used by the NSWC Crane Facility, and there are no plans for the facility to use this site in the future.

6.0 DESCRIPTION OF EXPOSURE PATHWAYS

6.1 HUMAN RECEPTOR EXPOSURE PATHWAYS

All soil with chemical concentrations above the cleanup goals has been removed from the Dump Site B area. The excavation was not backfilled and the bedrock is currently exposed. Humans are potentially exposed to several routes of exposure. The following routes of exposure are considered for human receptors:

Soil — The soil contaminants remaining around the SWMU are below the clean-up goals for this site. Soil with contaminant concentrations above the clean-up goals has been removed from the site and not replaced. The site currently consists of exposed bedrock. Human exposure to contaminated soil has been eliminated by removing the contaminated soil and transporting it to an approved disposal area.

Groundwater — Groundwater is not currently being used in the vicinity of the site. Leaching of contaminants from the soil to the groundwater has been eliminated by removing soils above the clean-up levels from the site. Prior to remediation, hazardous waste was present on top of bedrock and the possibility exists that contaminants leached into the groundwater prior to remediation. The groundwater will need to be evaluated at a later date.

Surface water — Surface water is not present at SWMU 26/08D.

Air — Wind erosion and atmospheric dispersion of contaminants at the site has been eliminated by removing soil from the site. The site currently consists of exposed bedrock.

6.2 ECOLOGICAL EXPOSURE PATHWAYS

All soil with chemical concentrations above the cleanup goals has been removed from the Dump Site B area. The excavation was not backfilled and bedrock is currently exposed. Ecological receptors are potentially exposed to several routes of exposure. The following routes of exposure are considered for ecological receptors:

Soil — The soil contaminants remaining around the SWMU are below the clean-up goals for this site. Soil with contaminant concentrations above the clean-up goals has been removed from the site and not replaced. The site currently consists of exposed bedrock. Ecological receptor exposure to contaminated soil has been eliminated by removing the contaminated soil and transporting it to an approved disposal area.

Groundwater — Groundwater is not currently being used in the vicinity of the site. Leaching of contaminants from the soil to the groundwater has been eliminated by removing soils above the clean-up levels from the site. Prior to remediation, hazardous waste was present on top of bedrock and the possibility exists that contaminants leached into the groundwater prior to remediation. The groundwater will need to be evaluated at a later date.

Surface water — Surface water is not present at SWMU 26/08D.

Air — Wind erosion and atmospheric dispersion of contaminants at the site has been eliminated by removing soil from the site. The site currently consists of exposed bedrock.

7.0 CURRENT RISKS VS. REMEDIATION GOALS

A quality assurance program, in accordance with the procedures set forth in the *General Project Plans for Interim Measures Cleanup* [MK, 1995], was followed for the IM at SWMU 26/08. A complete description of the quality assurance program and its relationship to the remediation goals for the IM at SWMU 26/08 is contained in the IMR, and is summarized as follows:

- All samples collected from SWMU 26/08 were transported from the field to the laboratory using proper chain-of-custody procedures.
- Field quality control samples were collected to identify potential sources of error or cross contamination that may have occurred during collection, storage, or shipment of samples to the laboratory. Field quality control samples included trip blanks, field duplicates, and an equipment rinsate sample.
- The laboratory performed method blank, sample matrix spike, sample matrix spike duplicate, surrogate, and standard matrix spike analyses in order to evaluate laboratory accuracy, precision, representativeness, comparability, and completeness.

Overall, data quality objectives for accuracy, precision, representativeness, comparability, and completeness were met, and the data was considered acceptable.

The landfill and associated contaminated soil above the cleanup goals have been removed from the site. The target cleanup levels for these interim measures were taken from the *RCRA Corrective Action Guidance Human Data Quality Levels for RFI Projects*, June 18, 1994 [U.S. EPA, 1994]. Since the sources of contamination have been removed, there are no longer any exposure pathways by which human and ecological receptors can be exposed. Therefore, there is currently little or no risk to human and ecological receptors.

Table 5 presents comparison of the confirmation, background, and borrow pit sample concentrations, cleanup levels, and human and ecological receptor Ecological Data Quality Limit (EDQL) and Soil Screening Levels (SSL) values for barium and lead. A comparison of the values in Table 5 are summarized as follows:

- Barium and lead concentrations in the confirmation and background samples are below the SSL's for human receptors.
- Lead concentrations in the confirmation and background samples are below the EDQL's for ecological receptors.

TABLE 5
SWMU 26 CONTAMINANTS OF CONCERN
SUMMARY OF SOIL ANALYTICAL DATA, CLEANUP GOALS, AND RISK LEVELS
NSWC CRANE, INDIANA

Element	Cleanup Goal	Range		Ecological Risk	Human Risk	
		Confirmation Samples	Backfill Samples	EDQL	Ingestion	Inhalation
Barium	5,500	82.9 - 4,510	20.6 - 123	1.04	5,500	690,000
Lead	500	4.2 - 280	3.5 - 17	0.45	400	--

Notes:
1) All levels in mg/kg
2) Ranges of confirmation samples obtained from Table 3
3) Ranges of Backfill and Background samples obtained from Table 4
4) Ecological Risk levels obtained from Region 5 Model QAP Appendix C
5) EDQL = Ecological Data Quality Limit
6) Human Risk levels obtained from Region 5 Model QAP Appendix D
7) "-- = Not Established

- Barium concentrations in the confirmation and background samples are above the EDQL's for ecological receptors.

Groundwater quality has not been determined at this site and will be evaluated at a later date.

8.0 RISK SCREENING EVALUATION SUMMARY

Considering the work performed at SWMU-26/08D, the confirmation sample results and the acceptance of the physical work by the Navy, the requirements and objectives of the Interim Measures Cleanup Activities have been met. All contaminated soil above the clean-up goals for this site have been excavated to bedrock and removed from the site. It is recommended that no further action be taken for soil remediation at NSWC Crane SWMU-26/08D. The need for further action concerning groundwater quality will be evaluated at a later date.

9.0 REFERENCES

Morrison Knudsen Corporation, (MK) 1995a. *Work Plan for Interim Measures Cleanup at Solid Waste Management Units #23/00, #25/07D, and #26/08D*, Revision B, as amended, dated August 25, 1995.

Morrison Knudsen Corporation, (MK) 1995b. *Task-Specific Site Safety and Health Plan, Supplement to Work Plan for Solid Waste Management Units #23/00, #25/07D, and #26/08D*, Revision B, dated August 25, 1995.

Morrison Knudsen Corporation, (MK) 1995c. *Quality Control Plan for Interim Measures Cleanup, NSWC Crane, Crane, Indiana,* Revision C, August 1995.

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