8/20/98-01554

Final

Round Two Remedial Investigation Report Sites 11 and 17

Naval Weapons Station Yorktown Yorktown, Virginia

Volume II of II Appendices

Prepared For

Department of the Navy Atlantic Division

Naval Facilities Engineering Command

Norfolk, Virginia

Under The

LANTDIV CLEAN Program

Comprehensive Long-Term Environmental Action Navy

Reference:
Contract
N62470-89-D-4814

CTO-0354

August 1998

Baker

8/20/98-01554

FINAL

ROUND TWO
REMEDIAL INVESTIGATION REPORT
SITES 11 AND 17

NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA

APPENDICES

CONTRACT TASK ORDER 0354

AUGUST 20, 1998

Prepared for:

DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES
ENGINEERING COMMAND
Norfolk, Virginia

Under:

LANTDIV CLEAN Program
Contract N62470-89-D-4814

Prepared by:

BAKER ENVIRONMENTAL, INC.
Coraopolis, Pennsylvania

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APPENDIX A.1
ROUND TWO TEST BORING RECORDS

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 11-SB12

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-0354
PROJECT NAME: YORKTOWN WEAPONS STATION
LOCATION: YORKTOWN, VIRGINIA
DRILLING COMPANY: PARRATT-WOLFF, INC.
RIG TYPE & NUMBER: TRUCK B-53
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: CLEAR, COLD
GEOLOGIST: MARLENE IVESTER
ENV. SCIENTIST:
DATE BEGUN: 11/14/96 DATE COMPLETED: 11/14/96

GROUND SURFACE ELEVATION: 39.6
TOTAL DEPTH: 4 FT

SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	DESCRIPTION
S-1	SS	2 8 8 12	1.5	0	0	SAND -medium and SILT: 8" black fly ash matreial brown to orange, moist, loose
S-2	SS	11 9 12 13	1.7	0	0	Water at 4' bgs
						END OF BORING AT 4' BGS

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 11-SB13

SHEET: 1 OF: 1

PROJECT NUMBER: 62170-0054
PROJECT NAME: YORKTOWN WEAPONS STATION
LOCATION: YORKTOWN, VIRGINIA
DRILLING COMPANY: PARRATT-WOLFF, INC.
RIG TYPE & NUMBER: TRUCK B-53
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: CLEAR, COLD
GEOLOGIST: MARLENE IVESTER
ENV. SCIENTIST:
DATE BEGUN: 11/14/96 DATE COMPLETED: 11/14/96

GROUND SURFACE ELEVATION: 39.6
TOTAL DEPTH: 4 Ft.

SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	DESCRIPTION
S-1	SS	1 7 13 15	1.5	0	0	SAND -medium and SILT: 6" black fly ash matreial brown to orange, moist, loose
S-2	SS	12 10 12 15	1.7	0	0	
						Water at 4' bgs
						END OF BORING AT 4' BGS

ELEVATION: 39.00, 38.00, 37.00, 36.00, 35.00, 34.00, 33.00, 32.00, 31.00, 30.00, 29.00, 28.00, 27.00, 26.00, 25.00, 24.00, 23.00, 22.00, 21.00, 20.00, 19.00, 18.00, 17.00, 16.00, 15.00, 14.00, 13.00, 12.00

DEPTH: 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0, 11.0, 12.0, 13.0, 14.0, 15.0, 16.0, 17.0, 18.0, 19.0, 20.0, 21.0, 22.0, 23.0, 24.0, 25.0, 26.0, 27.0, 28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 11-SB14

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-0354
PROJECT NAME: YORKTOWN WEAPONS STATION
LOCATION: YORKTOWN, VIRGINIA
DRILLING COMPANY: PARRATT-WOLFF, INC.
RIG TYPE & NUMBER: TRUCK B-53
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: CLEAR, COLD
GEOLOGIST: MARLENE IVESTER
ENV. SCIENTIST:
DATE BEGUN: 11/14/96 DATE COMPLETED: 11/14/96

GROUND SURFACE ELEVATION: 39.8
TOTAL DEPTH: 4 Ft.

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	0.0										0.0
39.00	1.0		S-1	SS	1 2 2 2	1.8	0	0		SAND -medium and SILT: 6" black fly ash matreial brown to orange, moist, loose	1.0
38.00	2.0										2.0
37.00	3.0		S-2	SS	2 3 4 3	1.8	0	0			3.0
36.00	4.0									Water at 4' bgs END OF BORING AT 4' BGS	4.0
35.00	5.0										5.0
34.00	6.0										6.0
33.00	7.0										7.0
32.00	8.0										8.0
31.00	9.0										9.0
30.00	10.0										10.0
29.00	11.0										11.0
28.00	12.0										12.0
27.00	13.0										13.0
26.00	14.0										14.0
25.00	15.0										15.0
24.00	16.0										16.0
23.00	17.0										17.0
22.00	18.0										18.0
21.00	19.0										19.0
20.00	20.0										20.0
19.00	21.0										21.0
18.00	22.0										22.0
17.00	23.0										23.0
16.00	24.0										24.0
15.00	25.0										25.0
14.00	26.0										26.0
13.00	27.0										27.0
12.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 11-SB15

SHEET: 1 OF 1

PROJECT NUMBER: 62470-0354
PROJECT NAME: YORKTOWN WEAPONS STATION
LOCATION: YORKTOWN, VIRGINIA
DRILLING COMPANY: PARRATT-WOLFF, INC.
RIG TYPE & NUMBER: TRUCK B-53
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: CLEAR, COLD
GEOLOGIST: MARLENE IVESTER
ENV. SCIENTIST:
DATE BEGUN: 11/14/96 DATE COMPLETED: 11/14/96

GROUND SURFACE ELEVATION: 40.1
TOTAL DEPTH: 6 Ft.

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
40.00	0.0										0.0
39.00	1.0		S-1	SS	1 2 2 2	1.7	0	0		SAND -medium and SILT: 3" black fly ash matreial brown\orange to gray, moist, loose	1.0
38.00	2.0										2.0
37.00	3.0		S-2	SS	2 3 4 3	1.8	0	0			3.0
36.00	4.0									Water at 4' bgs	4.0
35.00	5.0		S-3	SS	4 4 4 5	1.7	0	0			5.0
34.00	6.0									END OF BORING AT 6' BGS	6.0
33.00	7.0										7.0
32.00	8.0										8.0
31.00	9.0										
30.00	10.0										10.0
29.00	11.0										11.0
28.00	12.0										12.0
27.00	13.0										13.0
26.00	14.0										14.0
25.00	15.0										15.0
24.00	16.0										16.0
23.00	17.0										17.0
22.00	18.0										18.0
21.00	19.0										19.0
20.00	20.0										20.0
19.00	21.0										21.0
18.00	22.0										22.0
17.00	23.0										23.0
16.00	24.0										24.0
15.00	25.0										
14.00	26.0										
13.00	27.0										27.0
12.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 11-SB16

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-0354
PROJECT NAME: YORKTOWN WEAPONS STATION
LOCATION: YORKTOWN, VIRGINIA
DRILLING COMPANY: PARRATT-WOLFF, INC.
RIG TYPE & NUMBER: TRUCK B-53
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: CLEAR, COLD
GEOLOGIST: MARLENE IVESTER
ENV. SCIENTIST:
DATE BEGUN: 11/13/96 DATE COMPLETED 11/13/96

GROUND SURFACE ELEVATION: 40.0
TOTAL DEPTH: 6 Ft.

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
40.00	0.0										0.0
39.00	1.0		S-1	SS	3 11 10 11	1.6	0	0		SAND -medium and SILT: 3" black fly ash matreial brown to gray, moist, loose	1.0
38.00	2.0										2.0
37.00	3.0		S-2	SS	10 8 8 7	1.7	0	0			3.0
36.00	4.0									Water at 4' bgs	4.0
35.00	5.0		S-3	SS	2 4 4 6	1.7	0	0			5.0
34.00	6.0									END OF BORING AT 6' BGS	6.0
33.00	7.0										7.0
32.00	8.0										8.0
31.00	9.0										9.0
30.00	10.0										10.0
29.00	11.0										11.0
28.00	12.0										12.0
27.00	13.0										13.0
26.00	14.0										14.0
25.00	15.0										15.0
24.00	16.0										16.0
23.00	17.0										17.0
22.00	18.0										18.0
21.00	19.0										19.0
20.00	20.0										20.0
19.00	21.0										21.0
18.00	22.0										22.0
17.00	23.0										23.0
16.00	24.0										24.0
15.00	25.0										25.0
14.00	26.0										26.0
13.00	27.0										27.0
12.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 11-SB17

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-0354
PROJECT NAME: YORKTOWN WEAPONS STATION
LOCATION: YORKTOWN, VIRGINIA
DRILLING COMPANY: PARRATT-WOLFF, INC
RIG TYPE & NUMBER: TRUCK B-53
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: CLEAR, COLD
GEOLOGIST: MARLENE IVESTER
ENV. SCIENTIST:
DATE BEGUN: 11/14/96 DATE COMPLETED: 11/14/96

GROUND SURFACE ELEVATION: 40.3
TOTAL DEPTH: 4 Ft.

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
40.00	0.0									SAND -medium and SILT:	0.0
39.00	1.0		S-1	SS	1 2 9 12	1.7	0	0		6" black fly ash matreial brown to orange, moist, med. dense	1.0
38.00	2.0										2.0
37.00	3.0		S-2	SS	12 13 9 12	1.7	0	0			3.0
36.00	4.0									Water at 4' bgs END OF BORING AT 4' BGS	4.0
35.00	5.0										5.0
34.00	6.0										6.0
33.00	7.0										7.0
32.00	8.0										8.0
31.00	9.0										
30.00	10.0										10.0
29.00	11.0										11.0
28.00	12.0										12.0
27.00	13.0										13.0
26.00	14.0										14.0
25.00	15.0										15.0
24.00	16.0										16.0
23.00	17.0										17.0
22.00	18.0										18.0
21.00	19.0										19.0
20.00	20.0										20.0
19.00	21.0										21.0
18.00	22.0										22.0
17.00	23.0										23.0
16.00	24.0										24.0
15.00	25.0										
14.00	26.0										
13.00	27.0										27.0
12.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 11-SB18

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-0354
PROJECT NAME: YORKTOWN WEAPONS STATION
LOCATION: YORKTOWN, VIRGINIA
DRILLING COMPANY: PARRATT-WOLFF, INC.
RIG TYPE & NUMBER: TRUCK B-53
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: CLEAR, COLD
GEOLOGIST: MARLENE IVESTER
ENV. SCIENTIST:
DATE BEGUN: 11/14/96 DATE COMPLETED: 11/14/96

GROUND SURFACE ELEVATION: UNKNOWN
TOTAL DEPTH:

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
0.00	0.0										0.0
-1.00	1.0		S-1	SS	1 1 6 13	1.7	0	0		SAND -medium and SILT: 6" black fly ash matreial brown to orange, moist, med. dense	1.0
-2.0	2.0										2.0
-3.00	3.0		S-2	SS	15 13 13 13	1.8	0	0			3.0
-4.00	4.0									Water at 4' bgs END OF BORING AT 4' BGS	4.0
-5.00	5.0										5.0
-6.00	6.0										6.0
-7.00	7.0										7.0
-8.00	8.0										8.0
-9.00	9.0										9.0
-10.00	10.0										10.0
-11.00	11.0										11.0
-12.00	12.0										12.0
-13.00	13.0										13.0
-14.00	14.0										14.0
-15.00	15.0										15.0
-16.00	16.0										16.0
-17.00	17.0										17.0
-18.00	18.0										18.0
-19.00	19.0										19.0
-20.00	20.0										20.0
-21.00	21.0										21.0
-22.00	22.0										22.0
-23.00	23.0										23.0
-24.00	24.0										24.0
-25.00	25.0										25.0
-26.00	26.0										26.0
-27.00	27.0										27.0
-28.00	28.0										28.0

APPENDIX A.2
ROUND TWO TEST PIT LOGS

Baker

Baker Environmental, Inc.

TEST PIT RECORD

Project: RI FOR SITES 11-17 CTO No.: 62470-354

Test Pit No.: 17TP01 Date: 11-2-96 Weather:

Endpoint Coordinates: North: North:

East: East:

Elevation: Elevation:

Contractor: Equipment: Baker Rep.: KENNETH A. TUA

TEST PIT CROSS SECTION

0 W E

1' TOP SOIL - BROWN WITH ORGANICS. DAMP

COARSE SAND AND FINE GRAVEL
DARK BROWN, MOIST
0 HNU

6'

MEDIUM TO COARSE SAND AND FINE GRAVEL
GRAY, MOIST TO WET.
0 HNU

8' WATER AT 8'

Comments: PIT DIM. 2'W x 8.7'L x 8'D

NO DEBRIS WAS OBSERVED. SOIL WAS VERY LOOSE
WITH CONTINUOUS FALL IN DURING EXCAVATION

Baker

Baker Environmental, Inc.

TEST PIT RECORD

Project: RI FOR SITES 11 + 17 CTO No.: 62470 - 354

Test Pit No.: 17TP02 Date: 11-3-96 Weather: _____

Endpoint Coordinates: North: _____ North: _____

East: _____ East: _____

Elevation: _____ Elevation: _____

Contractor: _____ Equipment: _____ Baker Rep.: KENNETH A. TUA

TEST PIT CROSS SECTION

0 W E

1' TOP SOIL - DARK BROWN, ORGANICS, DAMP

COARSE SAND SOME SILT.
TAN WITH BROWN SPOTS,
DAMP TO MOIST.
0 HNU.

7' WATER AT 7'

Comments: Pit Dim. 2'w x 15'L x 7'D

NO DEBRIS WAS OBSERVED. SOIL WAS VERY LOOSE
WITH CONTINUOUS FALL IN DURING EXCAVATION

Baker

Baker Environmental, Inc.

TEST PIT RECORD

Project: RI FOR SITES 11-17 CTO No.: 62470 - 354

Test Pit No.: 17TP03 Date: 11-3-96 Weather: _____

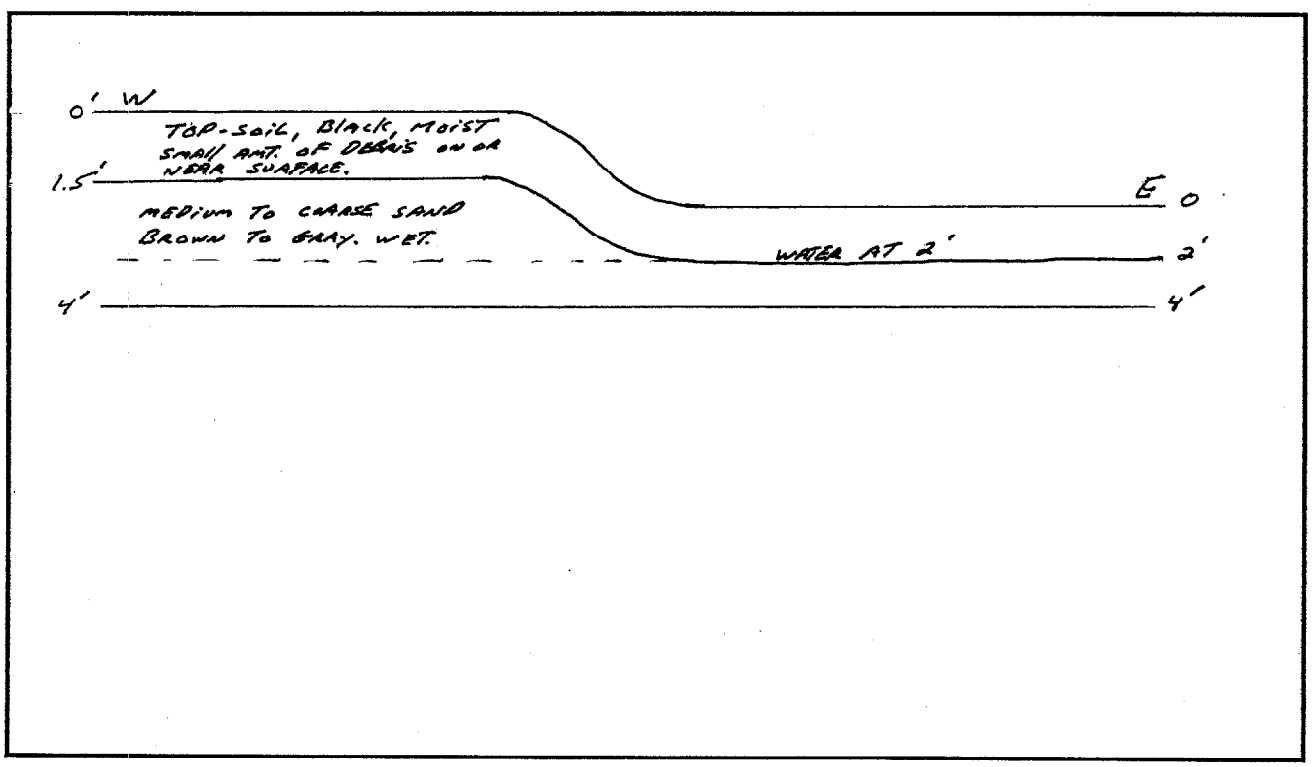
Endpoint Coordinates: North: _____ North: _____

East: _____ East: _____

Elevation: _____ Elevation: _____

Contractor: _____ Equipment: _____ Baker Rep.: KENNETH A. TUA

TEST PIT CROSS SECTION



Comments: PIT DIM: 2' W x 10' L x 4' D

DEBRIS SUCH AS PEICES OF CONCRETE, JUNK IRON, SHINGLES, TAR PAPER IN SMALL AMOUNTS WERE UNCOVERED NEAR SURFACE. WATER WAS ENCOUNTER VERY SHALLOW APPROX. 2' BGS. THERE WERE NO DETECTIONS BY THE HNU.

Baker

Baker Environmental, Inc.

TEST PIT RECORD

Project: RI FOR SITES 11+17 CTO No.: 62470-354

Test Pit No.: 17TP05 Date: 11-2-96 Weather: _____

Endpoint Coordinates: North: _____ North: _____

East: _____ East: _____

Elevation: _____ Elevation: _____

Contractor: _____ Equipment: _____ Baker Rep.: KENNETH A. TUA.

TEST PIT CROSS SECTION

0' S N

1' TOP SOIL, BROWN, ORGANICS, DAMP

FINE SAND AND SILT.
YELLOW. MOIST TO WET.
0 HNU.
WATER AT 3'

4'

FINE SAND AND SILT.
GRAY, WET. 0HNU

Comments: Pit Dim: 2'W x 15'L x 5'D

NO DEBRIS WAS OBSERVED. SOIL WAS SATURATED WITH WATER.

SURFACE WATER MEASURED 10' AWAY FROM TEST PIT.

Baker

Baker Environmental, Inc.

TEST PIT RECORD

Project: RI FOR SITES 11 & 17 CTO No.: 62470-354

Test Pit No.: 17TP06 Date: 11-3-96 Weather: _____

Endpoint Coordinates: North: _____ North: _____

East: _____ East: _____

Elevation: _____ Elevation: _____

Contractor: _____ Equipment: _____ Baker Rep.: KENNETH A. TUIA

TEST PIT CROSS SECTION

0 NE SW

1' TOP SOIL, DARK BROWN, ORGANICS

MEDIUM TO COARSE SAND
SOME SILT TRACE CLAY.
LT. BROWN. DAMP TO MOIST.
0 HNU. WATER AT 3'

5'

Comments: PIT DIM: 2'W x 13'L x 5'D

NO DEBRIS WAS OBSERVED. SOILS WERE COHESIVE.

Baker

Baker Environmental, Inc.

TEST PIT RECORD

Project: RI FOR SITES 11+17 CTO No.: 62470-354

Test Pit No.: 17TP07 Date: 11-2-96 Weather:

Endpoint Coordinates: North: North:

East: East:

Elevation: Elevation:

Contractor: Equipment: Baker Rep.: KENNETH A. TUA.

TEST PIT CROSS SECTION

0 W E

Top Soil, Brown, organics, damp.

1.5'

Fine sand and silt.
Yellow to Lt. Brown.
Moist. 0 HNU.

5'

Fine sand and silt
Blue to Lt. Gray
Moist to wet.
0 HNU. WATER AT 7'

8'

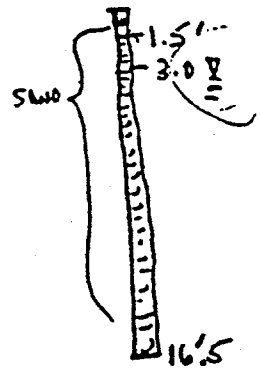
Comments: Pit Dim: 2'w x 15'L x 8'D

NO DEBRIS WAS OBSERVED. SOILS WERE A BIT MORE COHESIVE AND PIT STAYED OPEN DURING EXCAVATION.

APPENDIX A.3
EXISTING MONITORING WELL
SOIL BORING/WELL INSTALLATION LOGS

Dames & Moore

LOCATION OF BORING



DATUM

ELEVATION

JOB NO.	CLIENT	LOCATION
13542	LANTDIV - US NAVY	NWS - yorktown VA

DRILLING METHOD: Arlco ATV MC55 7½" HSA

BORING NO. 1GW64

SHEET 1 OF 1

SAMPLING METHOD: 24" gel spoon

WATER LEVEL	3-3.5'			
TIME	16:00			
DATE	1-7-86			
CASING DEPTH				

DRILLING	START	FINISH
TIME	14:15	16:30
DATE	1-7-86	1-7-86

SURFACE CONDITIONS:

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT. SAMPLER	NUMBER OF RINGS	DEPTH IN FEET	SOIL GRAPH	
				1		0		clean ~~and~~ poorly sorted (well graded) fine to coarse sands, LOOSE
				2 2 2 1 (4)		1		
						2	SP	Brown silty well graded fine to med sand
				1 2 (3)		3		saturated
				1 1 1 (1)		4		
						5	SM	silty poorly sorted fine to med sands, LOOSE
						6		
						7		
						8		
						9		
				4 4 5 (9)		10	SC	grey-green clayey fine sand, LOOSE
						11		
						12		
						13		
						14		
				4 6 7 (13)		15		
						16	SP	grey-green shelly med and fine sand ~~loose~~ MEDIUM DENSE
						17		
						18		
						19		
						20		

DRILLING CONTR.

No. 28408

BY

DATE

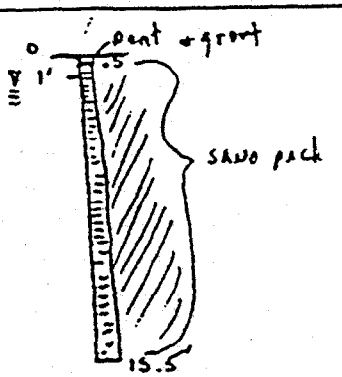
CHK'D BY

888.1 (3) (REV. 11-80)

1GW05

Dames & Moore

LOCATION OF BORING



DATUM

ELEVATION

JOB NO.	CLIENT	LOCATION
13542	LANTDIV - US. NAVY	NWS - York VA

DRILLING METHOD: MC 45
7½ H.S.A.

BORING NO. NW 1G

SHEET 1 OF

SAMPLING METHOD: 24" split spoon

DRILLING

					START	
WATER LEVEL	1.0'				TIME	
TIME	14:00				13:15	1[illegible]
DATE	12-11-95				DATE	
CASING DEPTH	15'.5'				12-11-95	

SURFACE CONDITIONS:

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT. SAMPLER	NUMBER OF RINGS	DEPTH IN FEET	SOIL GRAPH	
				3 4 4 5 (8)		0		TAN silty uniform med SAND - saturated, co
				6 6 9 3 (12)		1		
				3 3 (6)		2	SP	white-grey fine sand - v. uniform - dark heavy minerals present - saturated, MEDIUM DENSE
						3		
						4		orange to brown, uniform fine sand w/ dark h minerals present, LOOSE
						5		
						6		
						7		
						8		
						9		
				2 2 2 (5)		10		dk green-grey clayey silt to fine SAND, MED S
						11	ML SM	
						12		
						13		
						14		
				3 3 5 (8)		15	ML	grey green w/ brown mottling clayey silt,
						16		
						17		
						18		
						19		
						20		

No. 28451

DRILLING CONTR.

BY

DATE

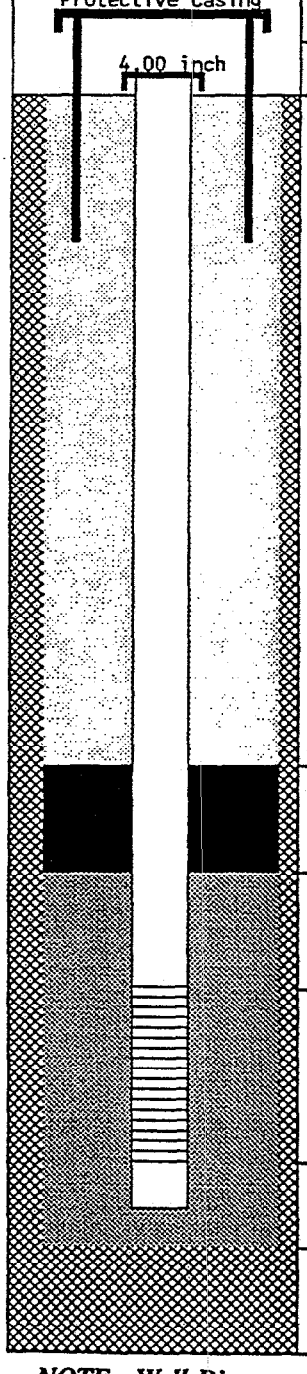
CHK'D BY

GSB.1 (8) (REV: 11-[illegible])

Well Completion Summary **ROY F. WESTON, Inc.**

CLIENT	WPNSTA YORKTOWN	*DRILLING FIRM*	HARDIN-HUBER
SITE NAME	WPNSTA YORKTOWN	*INSPECTOR*	W. BREW

WELL ID	1GW12	*WATER LEVELS*
START DATE	06/10/92	6.20 FT (TOC) ON 07/15/92
COMPLETION DATE	06/10/92	



DEPTH		ELEV.
2.50	TC	45.00
0.00	GS	42.50
2.00	BN	40.50
3.00	SP	39.50
4.00	SC	38.50
14.00	BS	28.50
14.00	TD	28.50

DRILLING SUMMARY

Driller ROYCE KEENAN
Drilling Fluid NONE
Well Type SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 *inch* *Interval:* 0.00 to 4.00 *ft.*
Type : PVC SCH 40

Stick Up Inner Casing: 2.50 *ft.* *Protective Casing:* 0.00 *ft.*

Casing Grout: CEMT/BENT *Interval:* 0.00 to 2.00 *ft.*

Seal Type: BENTONITE PELLETS *Interval:* 2.00 to 3.00 *ft.*

Sand Pack Type : #2 SAND *Interval:* 3.00 to 14.00 *ft.*
Grain Size : UNIFORM *Median Diameter:*
Screen Diameter: 4.00 *Interval:* 4.00 to 14.00 *ft.*
Type : PVC *Slots:* .020 *inches*

Silt Trap Interval: 0.00 to 0.00 *ft.*
Backfill Type : *Interval:* 0.00 to 0.00 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth
= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:

NOTE: Well Diagram not to Scale *Elevations are feet above mean sea level*

01/06/93

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 14.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: W. BREW
WELL ID	: 1GW12	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343136.0000 surveyed	DRILLING RIG	: B-61
EASTING	: 2562505.0000 surveyed	DATE STARTED	: 06/10/92
ELEVATION	: 42.500 surveyed	DATE COMPLETED	: 06/10/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			65	Fill	DK YLLWISH BRN	SFT	MST	2 1 1 1	OVA 0.0	
41	1									
40	2		10	Fill	DK YLLWISH BRN	SFT	MST	3 3 4 3	OVA 0.0	
39	3									
38	4		60	Fill	BROWNISH YELLOW	LSE	MST	2 4 3 6	OVA 0.0	0.2' piece of wood in spoon OVA = 3 units.
37	5									
36	6		85	Fill	BROWNISH YELLOW	LSE	MST	5 7 9 8	OVA 0.0	
35	7			Silty sand, SM	YLLWISH BROWN	SFT	WET		OVA 0.0	
34	8		75	Silty sand, SM	YELLOWISH BROWN	SFT	WET	3 6 4 4	OVA 0.0	
33	9			Poorly graded sand with silt, SP-SM	LT GRAY	SFT	WET		OVA 0.0	
32	10		80	Poorly graded sand with silt, SP-SM	LT GRAY	SFT	WET	1 3 2 2	OVA 0.0	

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 14.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: W. BREW
WELL ID	: 1GW12	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343136.0000 surveyed	DRILLING RIG	: B-61
EASTING	: 2562505.0000 surveyed	DATE STARTED	: 06/10/92
ELEVATION	: 42.500 surveyed	DATE COMPLETED	: 06/10/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Poorly graded sand with silt, SP-SM	LT GRAY	SFT	WET		OVA 0.0	
31	11			Silty sand, SM		SFT	WET		OVA 18.2	
30	12		95	Silty sand, SM		SFT	WET	2 3 4 6	OVA 0.0	
29	13			Silty sand, SM		FRM	WET		OVA 0.0	
28	14		90	Silty sand, SM		FRM	WET	3 3 3 4		
27	15			Sandy lean clay, CL		FRM	MST		OVA 0.0	
26	16									
25	17									
24	18									
23	19									
22	20									

DATE: 12/08/92 **** LITHOLOGICAL DATA FOR - CLIENT ID: BAKER *** PAGE: 14

BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)		SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
1GW12	1	1	0.00	2.00	SPS		0	F	40	50	10	0		MOD	POR	SFT	MST	
1GW12	2	1	2.00	4.00	SPS		0	F	40	50	10	0		MOD	POR	SFT	MST	
1GW12	3	1	4.00	6.00	SPS		0	F	90	10	0	0			MOD	LSE	MST	
1GW12	4	1	6.00	7.10	SPS		0	F	90	10	0	0			MOD	LSE	MST	
1GW12	4	2	7.10	8.00	SPS		0	F	80	20	0	0			MOD	SFT	WET	
1GW12	5	1	8.00	9.00	SPS		0	F	80	20	0	0			MOD	SFT	WET	
1GW12	5	2	9.00	10.00	SPS		0	F	90	10	0	0			MOD	SFT	WET	
1GW12	6	1	10.00	10.70	SPS		0	F	90	10	0	0			MOD	SFT	WET	
1GW12	6	2	10.70	12.00	SPS		0	F	85	15	0	0			MOD	SFT	WET	
1GW12	7	1	12.00	12.80	SPS		0	F	85	15	0	0			MOD	SFT	WET	
1GW12	7	2	12.80	14.00	SPS		0	F	50	50	0	0		MOD		FRM	WET	
1GW12	8	1	14.00	14.80	SPS		0	F	50	50	0	0		MOD		FRM	WET	
1GW12	8	2	14.80	16.00	SPS		0		40	20	40	0		MOD		FRM	MST	

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudley Road Landfill Site 1
CTO NO.: 318
COORDINATES: EAST:
ELEVATION: SURFACE: 41.4

BORING NO.: 1SB12A
NORTH:
TOP OF PVC CASING: 43.34

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL
SIZE (DIAM.)		10"		
LENGTH		13'		
TYPE				
HAMMER WT.				
FALL				
STICK UP				

DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
1-24-96	13ft	Rain 65°	3	1620
1-26-96	52 ft	Cold 30°		

REMARKS:

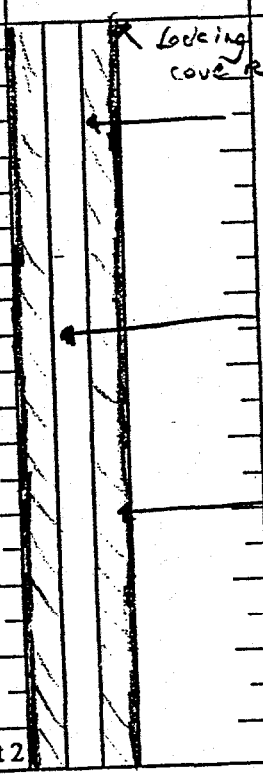
SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser	2"	PVC	+2.5	49.5
Screen	2"	PVC 0.01"	49.5	64.5

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description
	S-00					(* SAMPLE 1SB12A-00 collected)
1	1					
2	S-1	1.0 50%	1 1 2 2		0.4	(*SAMPLE 1SB12A-01, MS/MSD and Dup, collected. SAND, fine to coarse little SILT, Brown to Dark Brown, moist wet at 3ft,
3	3					
4	S-2	1.0 50%	3 3 6 7		0.4	
5	5					
6	S-3	1.0 50%	3 4 5 7		0.5	SAND, fine to medium, trace SILT, Lt. Brown stained Orange, wet
7	7					
8	S-4	1.0 50%	4 5 7 5		0.5	Color change to Gray.
9	9					
10	S-5	2.0 100%	1 2 1 2		0.4	CLAY and SILT Lt. Brown, damp
	11					

Well Installation Detail



Elevation (ft. MSL)

Match to Sheet 2

DRILLING CO.: Parratt Wolff
DRILLER: Doug Toma

BAKER REP.: Matt Lewis
BORING NO.: 1SB12A

SHEET 1 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudley Road Landfill Site 1
CTO NO.: 318 BORING NO.: ISB 12A

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
						Continued from Sheet 1		
11	11							
12	S-6	2.0 100%	2 3 3 3		0.3	CLAY and SILT, Lt. Brown, damp	10" casing	
13	13							
14	S-7	1.5 75%	2 3 6 6		0.2	SILT and CLAY, trace fine SAND, Grayish Blue, damp,	Cement/Bent grout	
15	15							
16	S-8	1.5 75%	WOH WOH 3 6		0.2		Sch 40 PVC Riser	
17	17							
18	S-9	1.5 75%	4 6 7 8		0.2			
19	19							
20	S-10	1.5 75%	3 3 4 5		0.2			
21	21							
22	S-11	1.75 75%	4 4 5 4		0.2	SILT and CLAY, trace fine SAND, 2" shell hash layer, Gray with brown organics, dry		
23	23							
24	S-12	1.5 75%	WOH WOH 2 6		0.2			
25	25							
26	S-13	1.75 85%	4 4 4 8		0.2	SILT some CLAY, little Shell fragments, trace fine SAND, Light brown moist to wet		
27	27							
28	S-14	0.5 25%	3 WOH WOH WOH		0.2			
29	29							
30	31	S-15	2.0 100%	4 4 4 5	0.2			

DRILLING CO.: Parratt Wolff BAKER REP.: Matt Lewis
DRILLER: Doug Toma BORING NO.: ISB12A SHEET 2 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudley Road Landfill Site 1
CTO NO.: 318 BORING NO.: 1SB12A

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
						Continued from Sheet 1		
31	31					SILT some CLAY, trace fine SAND, little Shell fragments, Lt. Gray, wet		
2	S-16	1.0 50%		WOH WOH 5 4	0.2			
3	33							
4	S-17	1.5 75%		WOH WOH 4 5	0.2			
5	35							
6	S-18	1.75 85%		WOH WOH 4 6	0.2			
7	37							
8	S-19	1.75 85%		4 6 11 12	0.2			
9	39							
40	S-20	1.5 75%		WOH 10 11 13	0.2		Cement/Bentonite grout	
1	41							
2	S-21	1.5 75%			0.2			
3	43							
4	S-22	1.5 75%		9 9 11 12	0.2		Bent SLURY Seal	
5	45							
6	S-23	1.0 50%		13 22 32	0.2			
7	47							
8	S-24	1.5 75%		12 23 32 36	0.2		sch 40 PVC Riser	
9	49							
50	51	S-25	1.5 75%		0.2		0.01 SLOTT PVC SCREEN	

DRILLING CO.: Parratt Wolff BAKER REP.: Matt Lewis
DRILLER: Doug Toma BORING NO.: 1SB12A SHEET 3 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudley Road Landfill Site 1
CTO NO.: 3181 BORING NO.: 1SB12A

SAMPLE TYPE
S = Split Spoon, A = Auger, T = Shelby Tube, W = Wash, R = Air Rotary, C = Core, D = Denison, P = Piston, N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
51						Continued from Sheet 1		
2	S-26	1.5	12 17		0.2	SILT some CLAY trace fine SAND, little Shell fragments, Lt Gray, wet		
3	53	75%	17 23					
4	S-27	1.5	29 22		0.2			
5	55	75%	27 26					
6	S-28	1.0	10 15		0.2	SILT and SAND, fine to medium, trace Shell fragments, Gray to Brown wet		
7	57	75%	24 18					
8	S-29	2.0	26 28		0.2		Silica SAND Pack	
9	59	100%	36 28					
60	S-30	1.5	17 16		0.1			
1	61	75%	15 12				0.01" SLOT PVC Scree.	
2	S-31	1.5	7 7 9		0.1	SILT some fine SAND, trace CLAY, trace Shell fragments, Dark Gray damp		
3	63	75%	9					
4	S-32	2.0	Shelby Tube					
5	65	100%	collected.				Caved Soil	
6								
7								
8								
9								
70								

DRILLING CO.: Parratt Wolff BAKER REP.: Matt Lewis
DRILLER: Doug Toma BORING NO.: 1SB12A SHEET 4 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudley Road Landfill Site 1
CTO NO.: 318
BORING NO.: 1SB12B
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: 40.70
TOP OF PVC CASING: 41.48

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)		10"			1-27-96	13	Rain 60°		
LENGTH		13'			1-27-96	25			
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS:

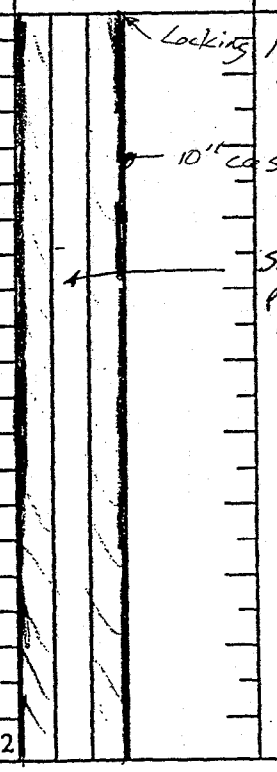
SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser	2"	Sch 40	+2.5	28
Screen	2"	0.01" SLOT	28	38

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description
1						(* See 1SB12A log for soil descriptions)
2						
3						
4						
5						
6						
7						
8						
9						
10						

Well Installation Detail



Elevation (ft. MSL)

Match to Sheet 2

DRILLING CO.: Parratt Wolff
BAKER REP.: Matt Lewis
DRILLER: Doug Toma
BORING NO.: 1SB12B

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudley Road Landfill Site 1
CTO NO.: 318 BORING NO.: 1SB 12B

SAMPLE TYPE		DEFINITIONS
S = Split Spoon	A = Auger	SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
T = Shelby Tube	W = Wash	RQD = Rock Quality Designation (%)
R = Air Rotary	C = Core	Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
D = Denison	P = Piston	Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
N = No Sample		

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11						Continued from Sheet 1		
12								10" Casing
13								
14								
15								
16								
17								
18								
19								
20								
21								Cement/B Grout
22								
23								
24								Bent Slurry Seal
25								
26								Sch 40 PVC Riser
27								
28								
29								0.01" Slot Screen
30								

DRILLING CO.: Parratt Wolff BAKER REP.: Matt Lewis
DRILLER: Doug Toma BORING NO.: 1SB12B SHEET 2 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudley Road Landfill Site 1
CTO NO.: 318 BORING NO.: 1SB12B

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
						Continued from Sheet 1		
31								
2								
3							0.01" SLOT PVC Screen	
4								
5								
6							Silica SAND PACK	
7								
8								
9						END OF BORING at 38 ft.		
40								
1								
2								
3								
4								
5								
6								
7								
8								
9								
50								

DRILLING CO.: Parratt Wolff BAKER REP.: Matt Lewis
DRILLER: Doug Toma BORING NO.: 1SB12B SHEET 3 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudley Road Landfill Site 1
CTO NO.: 318
BORING NO.: 1SB13A
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF PVC CASING:

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)		10"			1-25-96	13 ft	Rain 60	4 ft	1030
LENGTH		13'			1-28-96	62	Clear 50		
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: * No HNu due to rain

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser	2"	Sch 40 PVC	+2.5	60
Screen	2"	0.01" slot	60	75

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
1	S-00					(* SAMPLE COLLECTED 1SB13A-00)	Locking Protective Cover	
2–3	S-1	2.0 100%	5 7 9 9		0.3	(* SAMPLE COLLECTED 1SB13A-01) SAND, fine to coarse little SILT, dark brown, moist	Sch 40 PVC Riser	
4–5	S-2	2.0 100%	3 3 5 7		0.3	wet at 4 ft.	Cement	
6–7	S-3	2.0 100%	3 3 5 8		0.3	SAND, fine to coarse, some SILT, brown, wet		
8–9	S-4	2.0 100%	5 6 11 11		0.3			
10–11	S-5	2.0 90%	WOH 1 2 WOH		0.3			

Match to Sheet 2

DRILLING CO.: Parratt Wolff
DRILLER: Doug Toma
BAKER REP.: Matt Lewis
BORING NO.: 1SB13A

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudley Road Landfill Site 1
CTO NO.: 318 BORING NO.: 1SB 13A

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
						Continued from Sheet 1		
11						SILT little SAND, trace CLAY, gray, moist		10" Casing
12	S-06	2.0 100%				Shelby Tube collected		Sch 40 PVC Riser
13	13							
14	S-07	2.0 100%	WOH		*	SILT, some fine SAND, some CLAY, Brown to Gray, moist		
15	15							Cement/Bentonite
16	S-08	2.0 80%	WOH					
17	17							
18	S-09	1.75 85%	WOH					
19	19							
20	S-10	1.75 85%	WOH 3 3 4			CLAY trace SILT trace fine SAND, Gray to dark Brown, damp		
21	21							
22	S-11	1.75 85%	3 5 5 6					
23	23							
24	S-12	1.75 85%	WOH WOH			SILT some to little CLAY, trace fine SAND, dark gray moist		
25	25							
26	S-13	2.0 100%	3 [illegible]			SILT little CLAY, dark Gray, damp to dry		
27	27							
28	S-14	2.0 100%	[illegible]			SILT some Shell fragments, Brownish Red, iron stain, dry		
29	29							
30	31	S-15	2.0 100%	4 6 8 8		SILT and shell fragments, trace CLAY, trace fine SAND, Gray to brown wet.		

DRILLING CO.: Parratt Wolff BAKER REP.: Matt Lewis
DRILLER: Doug Toma BORING NO.: 1SB13A

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudley Road Landfill Site 1
CTO NO.: 318 BORING NO.: 1SB13A

SAMPLE TYPE		DEFINITIONS
S = Split Spoon	A = Auger	SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
T = Shelby Tube	W = Wash	RQD = Rock Quality Designation (%)
R = Air Rotary	C = Core	Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
D = Denison	P = Piston	Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis
N = No Sample		

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
						Continued from Sheet 1		
31								
2	S-16	2.0 100%	8 6 6 7		*	SILT and to little shell fragments trace CLAY, trace fine SAND, trace decomposed shells, Gray, wet		
3 33								Cement/Ben grou
4	S-17	2.0 100%	3 5 7 9		0.0			
5 35								
6	S-18	2.0 100%	7 6 5 6		0.0			Sch 40 PVC Riser
7 37								
8	S-19	2.0 100%	3 4 5 3		0.0			
9 39								
40	S-20	2.0 100%	3 2 3 5		0.0	SILT and fine SAND, trace CLAY, trace Shell frags. partially decomposed, Gray, wet		
1 41								
2	S-21	1.0 50%	5 10 12 12		0.0			
3 43								
4	S-22	1.5 75%	8 16 18 26		0.0			
5 45								
6	S-23	1.75 85%	9 14 19 33		*	SILT and fine to medium SAND; trace Shell frags, Gray, wet		
7 47								
8	S-24	1.5 75%	22 31 45 56					
9 49								
50 51	S-25	1.75 85%	9 11 17 23			SAND, fine and SILT trace shells, Gray to dark Gray, wet.		

DRILLING CO.: Parratt Wolff BAKER REP.: Matt Lewis
DRILLER: Doug Toma BORING NO.: 1SB13A SHEET 3 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudley Road Landfill Site 1
CTO NO.: 3181 BORING NO.: 1SB13A

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
						Continued from Sheet 1		
51								
2	S-26	1.75 85%	6 9 23 29		*	SAND, fine and SILT, trace decomposed Shells, Gray to dark gray, wet		
3	53							
4	S-27	1.75 85%	14 20 17 27				Cement/Ben grout	
5	55							
6	S-28	1.75 85%	19 20 19 37				Bent. Slurry S	
7	57							
8	S-29	2.0 100%	4 20 42 59				Sch 40 PVC Riser	
9	59							
60	S-30	2.0 100%	15 11 15					
1	61				NO	SILT, and fine SAND, trace to CLAY, trace Shell frags. Dk. Gray to Gray damp to wet.		
2	S-31	2.0 100%	11 9 11 17				Silica Sand Pack	
3	63							
4	S-32	1.0 100%	3 4 6 7				0.01' SLOT PVC screen	
5	65							
6	S-33	1.0 100%	6 8 11 14					
7	67							
8	S-34	1.0 100%	7 7 14 19					
9	69							
70	S-35	1.75 85%	6 6 8 9					
	71							

DRILLING CO.: Parratt Wolff BAKER REP.: Matt Lewis
DRILLER: Doug Toma BORING NO.: 1SB13A SHEET 4 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudley Road Land fill Site 1
CTO NO.: 318 BORING NO.: 1SB13A

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
						Continued from Sheet 1		
1								
2	S-36	1.75 85%	12 14 20 32		*	SILT and fine SAND, trace shell fragments DK Gray to Gray, wet		
3	73						Silica SAND Pack	
4	S-37	1.75 85%	15 24 30 20				0.01" SLOT PVC screen	
5	75							
6						END OF BORIN 6 at 75 ft.		
7								
8								
9								
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								
0								

DRILLING CO.: Parratt Wolff BAKER REP.: Matt Lewis
DRILLER: Doug Toma BORING NO.: 1SB13A SHEET OF

BOREHOLE ID : 1GW13 SITE NAME/NO: WPNSTA YORKTOWN
BEGIN DATE : 06/10/92 END DATE : 06/10/92

LOGGER/COMPANY : W. BREW

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 16.00 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 12.00
INTERVAL: 0.00 ft. to 16.00 ft. BGS
METHOD : HSA FLUID : NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : FLUID :
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : HARDIN-HUBER
DRILLER : ROYCE KEENAN
DRILL RIG TYPE : B61

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	0.000	40.700
N. COORDINATE :	0.0000	343392.0000
E. COORDINATE :	0.0000	2563140.0000

WELL PERMIT.....(Y)es (N)o: N PERMIT # :

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: Y
WELL CLUSTER.....(Y)es (N)o: N No. OF WELLS : 0
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N TYPE DEPTH
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: Y
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

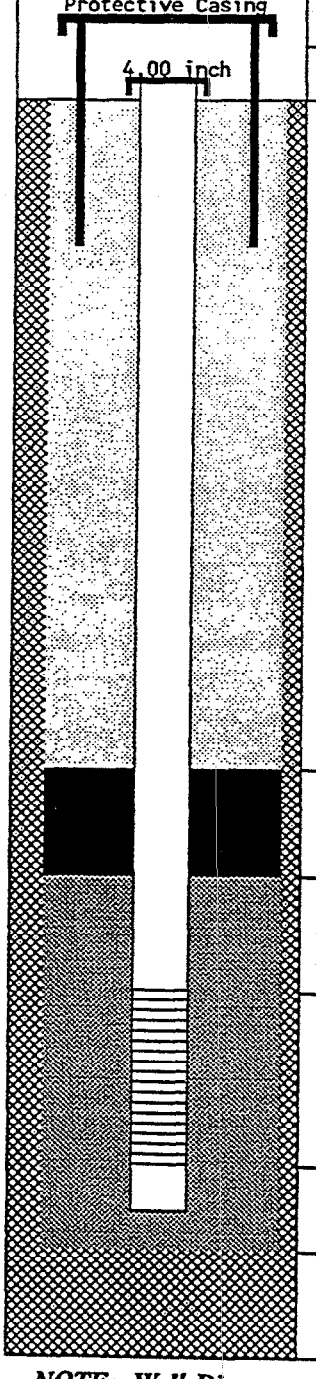
COMMENTS :

Well Completion Summary **ROY F. WESTON, Inc.**

CLIENT	WPNSTA YORKTOWN	*DRILLING FIRM*	HARDIN-HUBER
SITE NAME	WPNSTA YORKTOWN	*INSPECTOR*	W. BREW

WELL ID	1GW13
START DATE	06/10/92
COMPLETION DATE	06/10/92

WATER LEVELS



DEPTH		ELEV.
2.50	TC	43.20
0.00	GS	40.70
2.00	BN	38.70
3.00	SP	37.70
4.00	SC	36.70
14.00	BS	26.70
14.00	TD	26.70

DRILLING SUMMARY

Driller ROYCE KEENAN
Drilling Fluid NONE
Well Type SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 *inch* *Interval:* 0.00 to 4.00 *ft.*
Type : PVC SCH 40

Stick Up Inner Casing: 2.50 *ft.* *Protective Casing:* 0.00 *ft.*

Casing Grout: CEMT/BENT *Interval:* 0.00 to 2.00 *ft.*

Seal Type: BENTONITE *Interval:* 2.00 to 3.00 *ft.*

Sand Pack Type : #2 *Interval:* 3.00 to 14.00 *ft.*
Grain Size : UNIFORM *Median Diameter:* 2-3
Screen Diameter: 4.00 *Interval:* 4.00 to 14.00 *ft.*
Type : PVC *Slots:* .020 *inches*

Silt Trap Interval: 0.00 to 0.00 *ft.*
Backfill Type : *Interval:* 0.00 to 0.00 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth
= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

01/06/93

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 16.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: W. BREW
WELL ID	: 1GW13	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343392.0000 surveyed	DRILLING RIG	: B61
EASTING	: 2563140.0000 surveyed	DATE STARTED	: 06/10/92
ELEVATION	: 40.700 surveyed	DATE COMPLETED	: 06/10/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			65	Silty sand, SM	YELLOWISH BROWN	SFT	MST	2 2 4 5		
39	1									
38	2		90	Silty sand, SM	YELLOWISH BROWN	SFT	MST	4 6 6 5		
37	3									
36	4		70	Silty sand, SM	YELLOWISH BROWN	SFT	MST	2 3 5 6		
35	5			Poorly graded sand, SP	PALE BROWN	SFT	WET			
34	6		85	Poorly graded sand, SP	PALE BROWN	SFT	WET	4 5 5 4		
				Silty sand, SM	YELLOWISH BROWN	LSE	WET			
33	7									
32	8		80	Silty sand, SM	YELLOWISH BROWN	LSE	WET	2 2 2 2		
31	9			Silty sand, SM	PALE BROWN	FRM	WET			
30	10		85	Silty sand, SM	PALE BROWN	FRM	WET	1 2 1 1		

Borehole Log **ROY F. WESTON, Inc.**

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 16.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: W. BREW
WELL ID	: 1GW13	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343392.0000 surveyed	DRILLING RIG	: B61
EASTING	: 2563140.0000 surveyed	DATE STARTED	: 06/10/92
ELEVATION	: 40.700 surveyed	DATE COMPLETED	: 06/10/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silty sand, SM	PALE BROWN	FRM	WET			
29	11									
				Silty sand, SM		FRM	WET			
28	12		90	Silty sand, SM .		FRM	WET	1 2 2 3		
27	13									
26	14		90	Sandy lean clay, CL		FRM	MST	2 2 3 2	OVA 0.0	Same lith unit as above except gradational changes with depth.
25	15									
24	16									
23	17									
22	18									
21	19									
20	20									

DATE: 12/08/92 **** LITHOLOGICAL DATA FOR - CLIENT ID: BAKER *** PAGE: 15

BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)		SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
1GW13	1	1	0.00	2.00	SPS		0	F	85	15	0	0			MOD	SFT	MST	
1GW13	2	1	2.00	4.00	SPS		0	F	85	15	0	0			MOD	SFT	MST	
1GW13	3	1	4.00	5.00	SPS		0	F	85	15	0	0			MOD	SFT	MST	
1GW13	3	2	5.00	6.00	SPS		0	F	95	5	0	0			MOD	SFT	WET	
1GW13	4	1	6.00	6.20	SPS		0	F	95	5	0	0			MOD	SFT	WET	
1GW13	4	2	6.20	8.00	SPS		0	F	75	25	0	0			MOD	LSE	WET	
1GW13	5	1	8.00	9.10	SPS		0	F	75	25	0	0			MOD	LSE	WET	
1GW13	5	2	9.10	10.00	SPS		0	F	85	15	0	0		LOW		FRM	WET	
1GW13	6	1	10.00	11.80	SPS		0	F	85	15	0	0		LOW		FRM	WET	
1GW13	6	2	11.80	12.00	SPS		0	F	60	35	5	0		LOW		FRM	WET	
1GW13	7	1	12.00	14.00	SPS		0	F	60	35	5	0		LOW		FRM	WET	
1GW13	8	1	14.00	16.00	SPS		0	F	30	30	40	0		MOD		FRM	MST	

BOREHOLE ID : 1GW14 SITE NAME/NO: WPNSTA YORKTOWN
BEGIN DATE : 06/09/92 END DATE : 06/09/92

LOGGER/COMPANY : W. BREW

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 16.00 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 12.00
INTERVAL: 0.00 ft. to 16.00 ft. BGS
METHOD : HSA FLUID : NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : FLUID :
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : HARDIN-HUBER
DRILLER : ROYCE KEENAN
DRILL RIG TYPE : B61

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	0.000	44.800
N. COORDINATE :	0.0000	343412.0000
E. COORDINATE :	0.0000	2562286.0000

WELL PERMIT.....(Y)es (N)o: N PERMIT # :

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: Y
WELL CLUSTER.....(Y)es (N)o: N No. OF WELLS : 0
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N

	TYPE	DEPTH
PURGE :		0.00
SAMPLE :		0.00

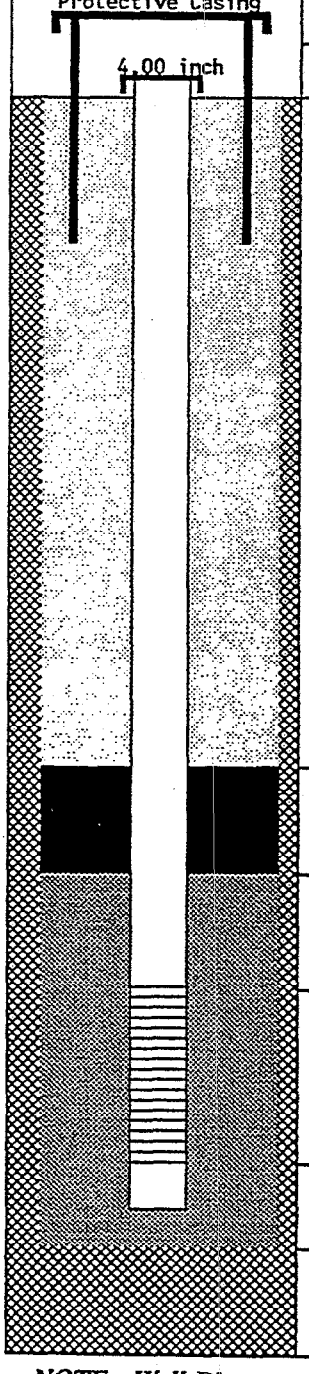
BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: Y
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :

Well Completion Summary **ROY F. WESTON, Inc.**

CLIENT	WPNSTA YORKTOWN	*DRILLING FIRM*	HARDIN-HUBER
SITE NAME	WPNSTA YORKTOWN	*INSPECTOR*	W. BREW

WELL ID	1GW14	*WATER LEVELS*
START DATE	06/09/92	
COMPLETION DATE	06/09/92	



DEPTH		ELEV.
2.50	TC	47.30
0.00	GS	44.80
3.00	BN	41.80
4.00	SP	40.80
5.00	SC	39.80
15.00	BS	29.80
15.00	TD	29.80

DRILLING SUMMARY

Driller ROYCE KEENAN
Drilling Fluid NONE
Well Type SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 *inch* *Interval:* 0.00 to 5.00 *ft.*
Type : PVC SCH 40

Stick Up Inner Casing: 2.50 *ft.* *Protective Casing:* 0.00 *ft.*

Casing Grout: CEMT/BENT *Interval:* 0.00 to 3.00 *ft.*

Seal Type: BENTONITE *Interval:* 3.00 to 4.00 *ft.*

Sand Pack Type : #2 *Interval:* 4.00 to 15.00 *ft.*
Grain Size : UNIFORM *Median Diameter:*
Screen Diameter: 4.00 *Interval:* 5.00 to 15.00 *ft.*
Type : PVC *Slots:* .020 *inches*

Silt Trap Interval: 0.00 to 0.00 *ft.*
Backfill Type : *Interval:* 0.00 to 0.00 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth

= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:

NOTE: Well Diagram not to Scale *Elevations are feet above mean sea level*

01/06/93

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 16.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: W. BREW
WELL ID	: 1GW14	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343412.0000 surveyed	DRILLING RIG	: B61
EASTING	: 2562286.0000 surveyed	DATE STARTED	: 06/09/92
ELEVATION	: 44.800 surveyed	DATE COMPLETED	: 06/09/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			90	Silty sand, SM	V. DK BROWN	LSE	MST	2 2 2 2	OVA 0.0	
				Silty sand, SM	YELLOWISH BROWN	LSE	MST	3 3 3 4	OVA 0.0	
43	1									
42	2		60	Poorly graded sand, SP	YELLOWISH BROWN	LSE	MST		OVA 0.0	
41	3									
40	4		60	Poorly graded sand, SP	YELLOWISH BROWN	LSE	MST	5 8 10 9	OVA 0.0	
39	5									
38	6		65	Poorly graded sand, SP	YELLOWISH BROWN	LSE	MST	6	OVA 0.0	
				Poorly graded sand, SP	PALE BROWN	LSE	WET	7 7 9	OVA 0.0	
37	7									
36	8			No Sample Recovered				3 3 1 3		
35	9									
34	10		75	Poorly graded sand with silt, SP-SM	PALE BROWN	LSE	WET	2 4 5 4	OVA 0.0	

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 16.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: W. BREW
WELL ID	: 1GW14	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343412.0000 surveyed	DRILLING RIG	: B61
EASTING	: 2562286.0000 surveyed	DATE STARTED	: 06/09/92
ELEVATION	: 44.800 surveyed	DATE COMPLETED	: 06/09/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Poorly graded sand with silt, SP-SM	PALE BROWN	LSE	WET		OVA 0.0	
33	11			Poorly graded sand with silt, SP-SM	V. DK GRYSH BRN	SFT	WET		OVA 0.0	
32	12		85	Poorly graded sand with silt, SP-SM	V DK GRYSH BRN	SFT	WET	3 2 1 2	OVA 0.0	
31	13									
30	14		95	Poorly graded sand with silt, SP-SM	V DK GRYSH BRN	SFT	WET	1 2 5 3	OVA 0.0	
29	15			Lean clay, CL	V DK GRYSH BRN	FRM	DRY		OVA 0.0	
28	16									
27	17									
26	18									
25	19									
24	20									

BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)		SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
1GW14	1	1	0.00	0.50	SPS		0	F	80	0	0	20			MOD	LSE	MST	
1GW14	1	2	0.50	2.00	SPS		0	MF	90	0	0	20			MOD	LSE	MST	
1GW14	2	1	2.00	4.00	SPS		0	MF	90	0	0	0			MOD	LSE	MST	
1GW14	3	1	4.00	6.00	SPS		0	MF	90	0	0	0			MOD	LSE	MST	
1GW14	4	1	6.00	6.10	SPS		0	MF	90	0	0	0			MOD	LSE	MST	
1GW14	4	2	6.10	8.00	SPS	F	10	MF	85	5	0	0			MOD	LSE	WET	
1GW14	5	1	8.00	10.00	SPS		0		0	0	0	0						
1GW14	6	1	10.00	11.00	SPS		0	F	90	10	0	0			MOD	LSE	WET	
1GW14	6	2	11.00	12.00	SPS		0	F	90	10	0	0			MOD	SFT	WET	
1GW14	7	1	12.00	14.00	SPS		0	F	90	10	0	0			MOD	SFT	WET	
1GW14	8	1	14.00	15.00	SPS		0	F	90	10	0	0			MOD	SFT	WET	
1GW14	8	2	15.00	16.00	SPS		0	VF	5	5	90	0		MOD		FRM	DRY	

BOREHOLE ID : 1GW17 SITE NAME/NO: WPNSTA YORKTOWN
BEGIN DATE : 06/10/92 END DATE : 06/10/92

LOGGER/COMPANY : W. BREW

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 14.00 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 12.00
INTERVAL: 0.00 ft. to 14.00 ft. BGS
METHOD : HSA FLUID : NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : FLUID :
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : HARDIN-HUBER
DRILLER : ROYCE KEENEN
DRILL RIG TYPE : B61

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	0.000	38.900
N. COORDINATE :	0.0000	343645.0000
E. COORDINATE :	0.0000	2652670.0000

WELL PERMIT.....(Y)es (N)o: N PERMIT # :

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: Y
WELL CLUSTER.....(Y)es (N)o: N No. OF WELLS : 0
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N

	TYPE	DEPTH
PURGE :		0.00
SAMPLE :		0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: Y
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

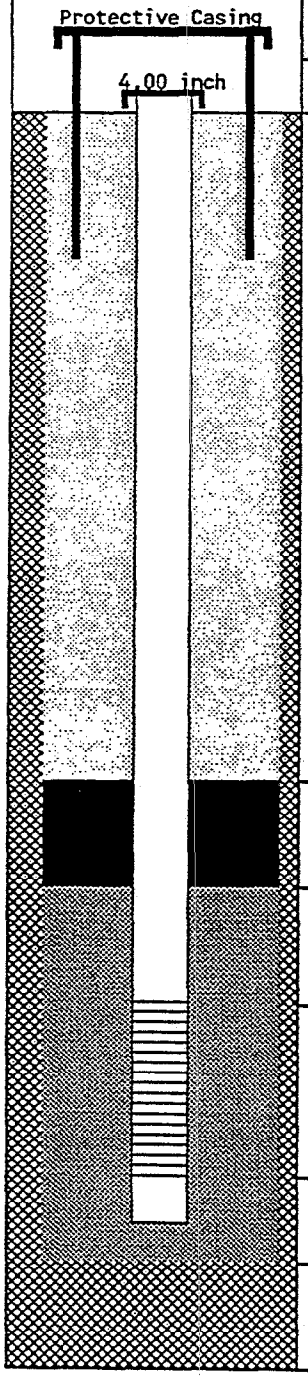
COMMENTS :

Well Completion Summary **ROY F. WESTON, Inc.**

CLIENT	WPNSTA YORKTOWN	*DRILLING FIRM*	HARDIN-HUBER
SITE NAME	WPNSTA YORKTOWN	*INSPECTOR*	W. BREW

WELL ID	1GW17
START DATE	06/10/92
COMPLETION DATE	06/10/92

WATER LEVELS



DEPTH		ELEV.
2.50	TC	41.40
0.00	GS	38.90
0.50	BN	38.40
1.00	SP	37.90
2.00	SC	36.90
12.00	BS	26.90
12.00	TD	26.90

DRILLING SUMMARY

Driller ROYCE KEENAN
Drilling Fluid NONE
Well Type SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 *inch* *Interval:* 0.00 to 2.00 *ft.*
Type : PVC SCH 40

Stick Up Inner Casing: 2.50 *ft.* *Protective Casing:* 0.00 *ft.*

Casing Grout: CEMT/BENT *Interval:* 0.00 to 0.50 *ft.*

Seal Type: BENTONITE *Interval:* 0.50 to 1.00 *ft.*

Sand Pack Type : #2 *Interval:* 1.00 to 12.00 *ft.*
Grain Size : UNIFORM *Median Diameter:* 2.3
Screen Diameter: 4.00 *Interval:* 2.00 to 12.00 *ft.*
Type : PVC *Slots:* .020 *inches*

Silt Trap Interval: 0.00 to 0.00 *ft.*
Backfill Type : *Interval:* 0.00 to 0.00 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth
= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:

NOTE: Well Diagram not to Scale *Elevations are feet above mean sea level*

01/06/93

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 14.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: W. BREW
WELL ID	: 1GW17	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343645.0000 surveyed	DRILLING RIG	: B61
EASTING	: 2652670.0000 surveyed	DATE STARTED	: 06/10/92
ELEVATION	: 38.900 surveyed	DATE COMPLETED	: 06/10/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			80	Poorly graded sand with silt, SP-SM	DK REDDISH BRN	SFT	MST	3 2 2 2	OVA 0.0	
37	1									
36	2		85	Poorly graded sand with silt, SP-SM	DK REDDISH BRN	SFT	MST	3 6 7 1	OVA 0.0	
35	3			Poorly graded sand with silt, SP-SM	DK REDDISH BRN	SFT	WET		OVA 0.0	Ion stained
				Poorly graded sand with silt, SP-SM	PALE BROWN	LSE	WET		OVA 0.0	
34	4		80	Poorly graded sand with silt, SP-SM	PALE BROWN	LSE	WET	2 2 3 2	OVA 0.0	
33	5			Silty sand, SM	PALE BROWN	LSE	WET		OVA 0.0	
32	6		75	Silty sand, SM	PALE BROWN	LSE	WET	3 6 3 4	OVA 0.0	
				Poorly graded sand, SP	V. DK GRAY	LSE	WET		OVA 0.0	
31	7									
30	8		90	Poorly graded sand, SP	V. DK GRAY	LSE	WET	3 3 3 3	OVA 0.0	
29	9			Silty sand, SM	V. DK GRAY	SFT	WET		OVA 0.0	
28	10		90	Silty sand, SM	V. DK GRAY	SFT	WET	2 2 2 1	OVA 0.0	

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 14.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: W. BREW
WELL ID	: 1GW17	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343645.0000 surveyed	DRILLING RIG	: B61
EASTING	: 2652670.0000 surveyed	DATE STARTED	: 06/10/92
ELEVATION	: 38.900 surveyed	DATE COMPLETED	: 06/10/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silty sand, SM	V. DK GRAY	SFT	WET		OVA 0.0	
27	11									
				Lean clay, CL	DK OLIVE	FRM	MST			
26	12		95	Lean clay, CL	DK OLIVE	FRM	MST	1 2 2 2		
25	13									
24	14									
23	15									
22	16									
21	17									
20	18									
19	19									
18	20									

DATE: 12/08/92 **** LITHOLOGICAL DATA FOR - CLIENT ID: BAKER *** PAGE: 17

BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)		SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
1GW17	1	1	0.00	2.00	SPS		0	MF	90	10	0	0			MOD	SFT	MST	
1GW17	2	1	2.00	3.20	SPS		0	MF	90	10	0	0			MOD	SFT	MST	
1GW17	2	2	3.20	3.80	SPS		0	F	90	10	0	0			MOD	SFT	WET	
1GW17	2	3	3.80	4.00	SPS		0	F	90	10	0	0			MOD	LSE	WET	
1GW17	3	1	4.00	5.00	SPS		0	F	90	10	0	0			MOD	LSE	WET	
1GW17	3	2	5.00	6.00	SPS		0	F	85	15	0	0			MOD	LSE	WET	
1GW17	4	1	6.00	6.20	SPS		0	F	85	15	0	0			MOD	LSE	WET	
1GW17	4	2	6.20	8.00	SPS		0	F	95	5	0	0			MOD	LSE	WET	
1GW17	5	1	8.00	9.00	SPS		0	F	95	5	0	0			MOD	LSE	WET	
1GW17	5	2	9.00	10.00	SPS		0	F	85	15	0	0			MOD	SFT	WET	
1GW17	6	1	10.00	11.70	SPS		0	F	85	15	0	0			MOD	SFT	WET	
1GW17	6	2	11.70	12.00	SPS		0		0	5	85	10		MOD		FRM	MST	
1GW17	7	1	12.00	14.00	SPS		0		0	5	85	10		MOD		FRM	MST	

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudley Road Landfill Site 1
CTO NO.: 318
BORING NO.: 1SB18
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF PVC CASING:

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)					1-24-96	19	Rain 65°	4.0	1415
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: * No HNu readings due to Rain

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
PVC Riser	2"	Sch 40 PVC	+2.5	3
PVC Screen	2"	0.01" slotted	3	18

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	(ft. MSL)
0.5	S-00					(* SAMPLE 1SB18-00 collected)		
1	AN							
2	S-01	2.0 100%	11 17 9 0		*	(* SAMPLE 1SB18-01 collected) SAND, fine to medium, little SILT, trace Gravel, Dark Brown, trace Organics, moist, wet at 4ft		
3								
4	S-02	2.0 100%	2 2 2 4		*			
5								
6	S-03	1.0 50%	3 6 12 10		*			
7								
8	S-04	0.2 10%	7 7 9 7		*			
9								
10	S-05	2.0 100%	2 2 2 2		*	SAND, fine to medium trace SILT, trace debris, Brown wet Match to Sheet 2		
11								

DRILLING CO.: Parratt-Wolff
BAKER REP.: Nat Lewis
DRILLER:
BORING NO.: 1SB18
SHEET 1

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Duddy Road Landfill Site 1
CTO NO.: 318 BORING NO.: 1SB18

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
						Continued from Sheet 1		
11								
12	S-07	2.0 100%	3 3 5 6		*	SAND, fine trace SILT, Light Gray, wet		
13								
14	S-08	2.0 100%	3 4 5 6		*			
15								
16	S-09	2.0 100%	2 3 3 4		*			
17								
18	S-10	1.0 50%	5 5 3 4		*	CLAY and SILT Grayish Blue, moist organic odor.		
19						END OF BORING 19 feet.		
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Parratt Wolff BAKER REP.: Matt Lewis
DRILLER: " BORING NO.: 1SB18 SHEET 2 C

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudley Road Landfill Site 1
CTO NO.: 318
BORING NO.: 1SB19
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF PVC CASING:

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE (96)	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"				1-28	15 ft	Foggy 30°	4.5	1230
LENGTH	2'								
TYPE	S S.								
HAMMER WT.	STD								
FALL	STD								
STICK UP									

REMARKS:

SAMPLE TYPE

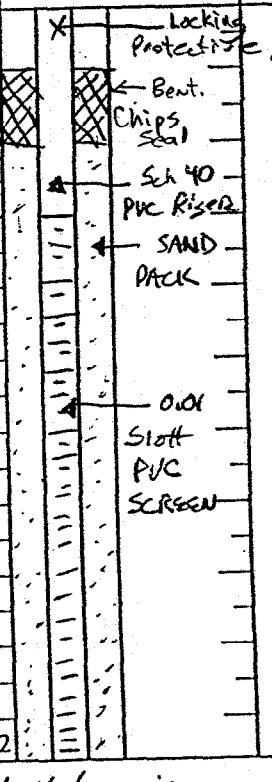
S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser	2"	sch 40 PVC	+2.5	3.0
Screen	2"	0.01" slotted PVC	3.0	13.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description
	S-00	1			0.2	*(SAMPLE COLLECTED 1SB19-00)
1	A-N					
2	S-01	1.0 50%	1 1 2 3		0.2	SAND, fine to med, little SILT, trace construction debris. Dk Brown to Brown, moist,
3						
4	S-02	1.5 75%	11 3 4 6		0.3	*Sample Collected 1SB19-02 → Wet at 4.5 ft
5						
6	S-03	1.0 50%	4 6 5 7		0.2	
7						
8	S-04	1.0 50%	6 5 5 6		0.2	SAND, fine to coarse, trace SILT, Lt Brown, wet
9						
10	S-05	1.75 87.5%	3 4 3 4		0.2	SAND, fine trace SILT, Lt Gray, wet

Match to Sheet 2

Well Installation Detail



El[illegible]n (ft. MSL)

DRILLING CO.: Parratt-Wolff
DRILLER:
BAKER REP.: Matt Lewis
BORING NO.: 1SB19
SHEET 1 O

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudley Road Landfill Landfill
CTO NO.: 318 BORING NO.: ISB19

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
						Continued from Sheet 1		
11						SAND, fine, little CLAY, trace SILT, Gray, moist	SAND PACK	
12	S-06	2.0 100%	2 2 2 2		0.2		0.01 SLOTT SCREEN	
13								
14	S-07	2.0 100%	WOH WOH 3 3		0.2		Caved Soil	
15								
16						END OF BORING 15ft		
17	S-08							
18								
19	S-09							
20								
21	S-10							
22								
23	S-11							
24								
25	S-12							
26								
27	S-13							
28								
29	S-14							
30								

DRILLING CO.: Parratt-Wolff BAKER REP.: Matt Lewis
DRILLER: BORING NO.: ISB19 SHEET 2 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudely Road Landfill Site 1
CTO NO.: 318
COORDINATES: EAST:
ELEVATION: SURFACE:
BORING NO.: 1SB20
NORTH:
TOP OF PVC CASING:

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
					1-23-96	13 ft	Clear 40°	2 ft	1445
SIZE (DIAM.)									
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS:

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
PVC Riser	2"	Sch. 40	+2.5	5
PVC Screen	2"	0.01 slott	5	10

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail
.5	S-00					(* SAMPLE COLLECTED 1SB20-00)	Locking protective cover
1	A-N					(* SAMPLE COLLECTED 1SB20-01) SAND, fine to medium, little to trace SILT, Brown to dark Brown, damp, wet at 2.0 feet.	Bentonite chip Seal
2	S-01	2.0 100%	1 1 2 3		0.1		
3							Sch 40 PVC Riser
4	S-02	2.0 100%	3 6 9 13		0.1		SAND Pack
5							0.01 Slotted PVC Screen
6	S-03	2.0 100%	3 2 4 1		0.1		
7						SILT and SAND, fine to medium, trace clay, Light Brown to Brown	
8	S-04	2.0 100%	10 10 6 11		0.1		
9						CLAY, trace SILT, Brown, Moist, Match to Sheet 2	
10	S-05	2.0 100%	5 5 5 6		0.1		Cuttings Soil
	11						

DRILLING CO.: Parratt Wolff Inc
DRILLER:
BAKER REP.: Matt Lewis
BORING NO.: 1SB20
SHEET 1

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudely Road Landfill Site 1
CTO NO.: 318 BORING NO.: 1SB20

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
						Continued from Sheet 1		
11	11							
12	S-06	1:0 50%	8 8 9 8			CLAY, trace SILT, Brown to Light Brown, moist	Caved Soil	
13	13							
14						END OF Boring		
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Parratt Wolff BAKER REP.: Matt Lewis
DRILLER: BORING NO.: 1SB20 SHEET 2 C

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudley Road Landfill Site 1
CTO NO.: 318
COORDINATES: EAST:
ELEVATION: SURFACE:
BORING NO.: 1SB21
NORTH:
TOP OF PVC CASING:

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)		10"			1-24-96	21	Rain 65	20ft	0830
LENGTH		13'							
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: * HNu Malfunction during Rain.

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
PVC Riser	2"	Sch 40	+2.5	25
PVC Screen	2"	0.01 Slotted	25	40

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail
1	S-00 A-N					(*SAMPLE COLLECTED 1SB21-00)	Locking Protective Cover
2	S-01	2.0 100%	3 3 2 3		0.1	SAND, fine to medium, trace SILT, Dark Brown to Brown moist	
3						SAND, fine to medium, little CLAY, trace SILT, Lt Brown, Moist	
4	S-02	2.0 100%	6 7 9 8		0.1	SILT and CLAY, little fine SAND, Lt Brown to Gray, damp trace Organics.	Sch 40 PVC Riser
5							
6	S-03	2.0 100%	2 2 3 4		0.1	SILT little CLAY, trace fine SAND, Lt Brown to Gray, moist	10' casing
7							Conc. Bentonite Seal
8	S-04	2.0 100%	4 4 4 4		0.1		
9							
10	S-05	2.0 100%	4 3 5 5		*		

Match to Sheet 2

DRILLING CO.: Parratt Wolff
DRILLER: Doug Toma
BAKER REP.: Matt Lewis
BORING NO.: 1SB21
SHEET 1

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudley Road Landfill Site 1
CTO NO.: 318 BORING NO.: 1SB21

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
						Continued from Sheet 1		
11	11							
12	S-06	2.0 100%	3 3 4 4		0.1	(* SAMPLE COLLECTED 1SB21-06) SILT and CLAY, trace fine SAND, Lt. Brown to Gray, moist.		10" Casing
13	13							
14	S-07	2.0 100%	WOH WOH WOH 2		0.1			Sch 40 PVC Riser
15	15							
16	S-08	2.0 100%	WOH WOH WOH WOH		0.1	Some Iron Staining Color change to Orange		
17	17							
18	S-09	2.0 100%	3 3 3 3		0.1	(* SAMPLE COLLECTED 1SB21-09)		Bentonite Seal
19	19							
20	S-10	2.0 100%	2 3 4 4		0.1	SILT and CLAY, little fine SAND, Reddish Brown, moist		
21	21					SILT and CLAY, trace fine SAND, little Shell fragments, Gray to dark gray, wet		
22	S-11	1.75 87.5%	3 4 6 4		0.2			Bent Slurry Seal
23	23							
24	S-12	1.75 87.5%	6 6 7 6		0.2			Sand Pack
25	25							
26	S-13	0.5 25%	5 5 3 2		0.2			0.01 Slot Screen
27	27							
28	S-14	1.0 50%	5 4 3 2		0.2			
29	29							
30	S-15	1.5 75%	WOH WOH 3 6		0.2	SILT and Fine SAND, little Shell fragments, Gray, wet		

DRILLING CO.: Parratt Wolff BAKER REP.: Matt Lewis
DRILLER: Doug Toma BORING NO.: 1SB21 SHEET 2 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Dudley Road Landfill
CTO NO.: 318 BORING NO.: 1SB21

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
Lab. Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab. Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
						Continued from Sheet 1		
31								
2	S-16	1.5	7 5 10 15		0.2	SILT and fine SAND little Shell fragments, Dark Gray, Wet		
3	33	75%						
4	S-17	1.5	7 9 13 15		0.2		0.01" SLOT PVC Screen	
5	35	75%						
6	S-18	1.5	9 11 13 18		0.2			
7	37	75%						
8	S-19	1.0	14 17 22 23		0.2	SILT and fine SAND, trace shell fragments Dark Gray with Lt. Gray laminations.	SAND Pack	
9	39	50%						
40	S-20	1.5	4 11 21 23		0.2			
1	41	75%					Caved Soil	
2						END OF BORING AT 41 ft.		
3								
4								
5								
6								
7								
8								
9								
50								

DRILLING CO.: Parratt Wolff BAKER REP.: Matt Lewis
DRILLER: Doug Toma BORING NO.: 1SB21 SHEET 3 OF 3

Dames & Moore

LOCATION OF BORING	JOB NO.	CLIENT	LOCATION
Drill to 17 feet pull augers - collapse is complete Redrill 12-10-85	13542	LANTDIV - US. NAVY	NWS Yorktown VA

DRILLING METHOD: MC 45 H. S.A.

BORING NO. 11GW03

SAMPLING METHOD: 24" split spoon

SHEET 1 OF 1

WATER LEVEL				
TIME				
DATE				
CASING DEPTH				

DRILLING

START	FINISH
TIME 15:30	TIME 12:30
DATE 12-9-85	DATE 12-10

DATUM

ELEVATION

SURFACE CONDITIONS:

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT. SAMPLER	NUMBER OF RINGS	DEPTH IN FEET	SOIL GRAPH	
				1		0	OL	5" organic
				2				→ ∇ water level
				3 (5)		1	SP	clean sorted, coarse sand, rounded grains, some pea gravel, loose
				4		2		
				5				
				7 (12)		3		well graded clean sand fine to coarse sand small pea gravel present, medium dense
				3				
				4				
				6		4		Top - med - coarse sand to small gravel
				(10)		5	SM	Lower sample - fine silty sand - brown orange medium dense
						6		
						7		
						8		
						9		
				2		10		start green
				2		11	ML/SM	grey green glaconitic silt to fine sand clay probably present, medium stiff
				2				
				(4)		12		
						13		
						14		
				3		15		
				3				
				4		16	CL/ML	grey green clayey silt, medium stiff
				(7)		17		
						18		
						19		
						20		

DRILLING CONTR.

No. 28446

BY

DATE

CHK'D BY

818.1 (3) (REV. 11-80)

Dames & Moore

LOCATION OF BORING	JOB NO.	CLIENT	LOCATION
	13592	LANTDIV - US. NAVY	NWS Yorktown VA

DRILLING METHOD: MC 45 Hollow Stem Auger 7½' NW

BORING NO. 11GW09

SAMPLING METHOD: 24" split spoon

SHEET 1 OF 2

					DRILLING START	DRILLING FINISH
WATER LEVEL	6'		-		TIME 13:30	TIME 15:00
TIME	19:30					
DATE	12-10-85				DATE 12-10-85	DATE 12-10-85
CASING DEPTH						

DATUM

ELEVATION

SURFACE CONDITIONS:

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT. SAMPLER	NUMBER OF RINGS	DEPTH IN FEET	SOIL GRAPH	
				4 5 5 (10)		0 1	SM	Brown, v. silty med SAND, MEDIUM DENSE
				3 3 4 4 5 (9)		2 3 4	SP	orange brown clean med-coarse SAND moderately uniform (graded), LOOSE orange-brown clean med to coarse SAND some pebbles - graded, LOOSE
						5 6 7		
						8 9 10		
				3 3 5 (8)		11 12 13 14	SM	orange-brown - silty fine to med SAND, LOOSE
				3 4 4 (8)		15 16 17 18		
						19 20	ML/CL	

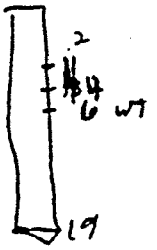
No. 28447 — DRILLING CONTR. Fdk Eng Norfolk

BY Kolberg DATE 12-11-85 CHK'D BY

028.1 (3) (REV. 11-80)

Dames & Moore

LOCATION OF BORING



JOB NO.	CLIENT	LOCATION
13542	LANTDIV - US NAVY	YORKTOWN, VA (NWS)

DRILLING METHOD: MC 45 H.Avg. NW

BORING NO. 11GW09

SHEET 2 OF 2

SAMPLING METHOD: 24" split spoon

					DRILLING START	DRILLING FINISH
WATER LEVEL	6'				TIME 13:30	TIME 15:00
TIME	14:30					
DATE	12-10-85				DATE 12-10-85	DATE 12-10-85
CASING DEPTH						

DATUM ELEVATION

SURFACE CONDITIONS:

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT. SAMPLER	NUMBER OF RINGS	DEPTH IN FEET	SOIL GRAPH	
				2		20		
				3		21	ML CL	Dk blue-green gray glauconitic clayey silt, medium stiff
				5		22		
				5		3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		

DRILLING CONTR. F.R. Eng. Norfolk

No. 20440

BY Kolberg DATE 12-19-85 CHK'D BY

828.1 (3) (REV. 11-80)

BOREHOLE ID : 11GW11 SITE NAME/NO: WPNSTA YORKTOWN
BEGIN DATE : 06/11/92 END DATE : 06/11/92

LOGGER/COMPANY : W. BREW/ROY F. WESTON

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) :

TOTAL DEPTH : 12.00 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 0.00
INTERVAL: 0.00 ft. to 12.00 ft. BGS
METHOD : SSA FLUID : NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : FLUID :
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : HARDIN-HUBER
DRILLER : ROYCE KEENAN
DRILL RIG TYPE : NONE

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	0.000	41.800
N. COORDINATE :	0.0000	343135.0000
E. COORDINATE :	0.0000	2562002.0000

WELL PERMIT.....(Y)es (N)o: N PERMIT # :

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: Y
WELL CLUSTER.....(Y)es (N)o: Y No. OF WELLS : 2
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N

	TYPE	DEPTH
PURGE :		0.00
SAMPLE :		0.00

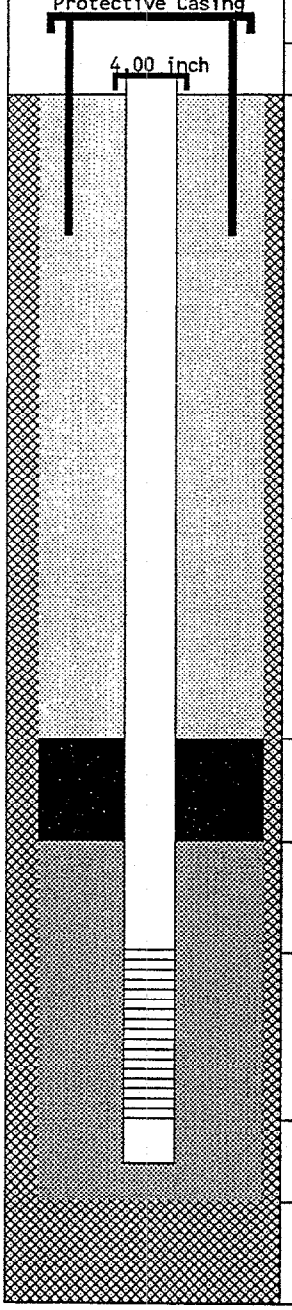
BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: Y
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :

Well Completion Summary **ROY F. WESTON, Inc.**

CLIENT	WPNSTA YORKTOWN	*DRILLING FIRM*	HARDIN-HUBER
SITE NAME	WPNSTA YORKTOWN	*INSPECTOR*	W. BREW

WELL ID	11GW11	*WATER LEVELS*
START DATE	06/12/92	
COMPLETION DATE	06/12/92	



DEPTH		*ELEV.*
2.50	*TC*	44.30
0.00	*GS*	41.80
2.00	*BN*	39.80
3.00	*SP*	38.80
4.00	*SC*	37.80
12.00	*BS*	29.80
12.00	*TD*	29.80

DRILLING SUMMARY

Driller ROYCE KEENAN
Drilling Fluid NONE
Well Type SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 *inch* *Interval:* 0.00 to 4.00 *ft.*
Type : PVC SCH 40

Stick Up Inner Casing: 2.50 *ft.* *Protective Casing:* 0.00 *ft.*

Casing Grout: CEMT/BENT *Interval:* 0.00 to 2.00 *ft.*

Seal Type: BENTONITE *Interval:* 2.00 to 3.00 *ft.*

Sand Pack Type : #2 *Interval:* 3.00 to 12.00 *ft.*
Grain Size : UNIFORM *Median Diameter:* 2-3
Screen Diameter: 4.00 *Interval:* 4.00 to 12.00 *ft.*
Type : PVC *Slots:* .020 *inches*

Silt Trap Interval: 0.00 to 0.00 *ft.*
Backfill Type : *Interval:* 0.00 to 0.00 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth
= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:

NOTE: Well Diagram not to Scale *Elevations are feet above mean sea level*

01/06/93

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 12.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: W. BREW/ROY F. WESTON
WELL ID	: 11GW11	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343135.0000 surveyed	DRILLING RIG	: NONE
EASTING	: 2562002.0000 surveyed	DATE STARTED	: 06/11/92
ELEVATION	: 41.800 surveyed	DATE COMPLETED	: 06/11/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						See boring 11GW11A for lithologic descriptions.
40	1									
39	2									
38	3									
37	4									
36	5									
35	6									
34	7									
33	8									
32	9									
31	10									

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 12.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: W. BREW/ROY F. WESTON
WELL ID	: 11GW11	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343135.0000 surveyed	DRILLING RIG	: NONE
EASTING	: 2562002.0000 surveyed	DATE STARTED	: 06/11/92
ELEVATION	: 41.800 surveyed	DATE COMPLETED	: 06/11/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						See boring 11GW11A for lithologic descriptions.
30	11									
29	12									
28	13									
27	14									
26	15									
25	16									
24	17									
23	18									
22	19									
21	20									

DATE: 12/08/92 **** LITHOLOGICAL DATA FOR - CLIENT ID: BAKER *** PAGE: 1

BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)		SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
11GW11	1	1	0.00	12.00	NS		0		0	0	0	0						

BOREHOLE ID : 11GW11A SITE NAME/NO: WPNSTA YORKTOWN
BEGIN DATE : 06/11/92 END DATE : 06/11/92

LOGGER/COMPANY : W. BREW

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 52.00 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 9.00
INTERVAL: 0.00 ft. to 52.00 ft. BGS
METHOD : HSA FLUID : NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : FLUID :
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : HARDIN-HUBER
DRILLER : ROYCE KEENAN
DRILL RIG TYPE : NONE

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	0.000	41.200
N. COORDINATE :	0.0000	343128.0000
E. COORDINATE :	0.0000	2562000.0000

WELL PERMIT.....(Y)es (N)o: N PERMIT # :

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: Y
WELL CLUSTER.....(Y)es (N)o: Y No. OF WELLS : 2
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N TYPE DEPTH
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: Y
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

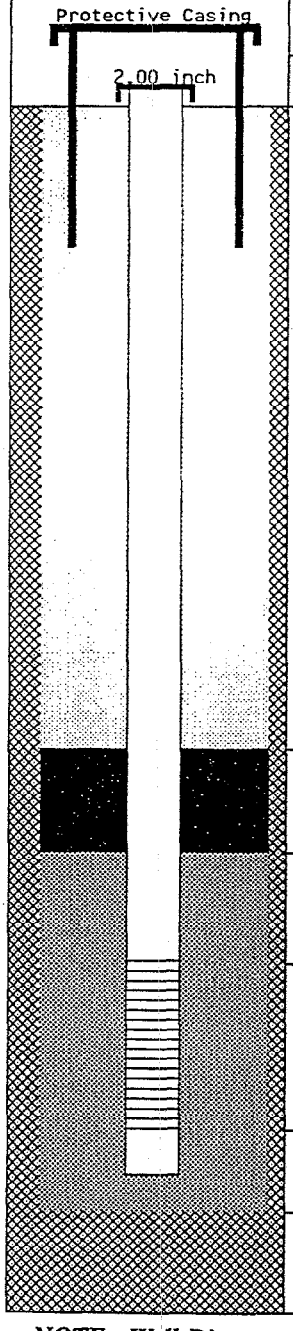
COMMENTS :

Well Completion Summary **ROY F. WESTON, Inc.**

CLIENT	WPNSTA YORKTOWN	*DRILLING FIRM*	HARDIN-HUBER
SITE NAME	WPNSTA YORKTOWN	*INSPECTOR*	W. BREW

WELL ID	11GW11A
START DATE	06/11/92
COMPLETION DATE	06/11/92

WATER LEVELS



DEPTH		*ELEV.*
2.00	*TC*	43.20
0.00	*GS*	41.20
43.00	*BN*	-1.80
44.00	*SP*	-2.80
46.00	*SC*	-4.80
51.00	*BS*	-9.80
52.00	*TD*	-10.80

DRILLING SUMMARY

Driller ROYCE KEENAN
Drilling Fluid
Well Type SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 2.00 *inch* *Interval:* 0.00 to 46.00 *ft.*
Type : PVC SCH 40

Stick Up Inner Casing: 2.00 *ft.* *Protective Casing:* 0.00 *ft.*

Casing Grout: CEMT/BENT *Interval:* 0.00 to 43.00 *ft.*

Seal Type: BENTONITE *Interval:* 43.00 to 44.00 *ft.*

Sand Pack Type : #2 *Interval:* 44.00 to 52.00 *ft.*
Grain Size : UNIFORM *Median Diameter:* 2-3
Screen Diameter: 2.00 *Interval:* 46.00 to 51.00 *ft.*
Type : PVC *Slots:* .020 *inches*

Silt Trap Interval: 51.00 to 52.00 *ft.*
Backfill Type : *Interval:* 0.00 to 0.00 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth
= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:

NOTE: Well Diagram not to Scale *Elevations are feet above mean sea level*

01/06/93

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 52.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: W. BREW
WELL ID	: 11GW11A	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343128.0000 surveyed	DRILLING RIG	: NONE
EASTING	: 2562000.0000 surveyed	DATE STARTED	: 06/11/92
ELEVATION	: 41.200 surveyed	DATE COMPLETED	: 06/11/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			85	Poorly graded sand with silt, SP-SM	YELLOWISH BROWN	LSE	DRY	1 1 2 2	OVA 0.0	
40	1									
39	2		55	Poorly graded sand with silt, SP-SM	YELLOWISH BROWN	LSE	DRY	3 2 3 5	OVA 0.0	
38	3									
37	4		60	Poorly graded sand with silt, SP-SM	YELLOWISH BROWN	LSE	DRY	2 7 12 11	OVA 0.0	
36	5			Poorly graded sand with silt, SP-SM	YELLOWISH BROWN	SFT	WET		OVA 0.0	
35	6		85	Poorly graded sand with silt, SP-SM	YELLOWISH BROWN	SFT	WET	6 8 9 7	OVA 0.0	
34	7									
33	8			Poorly graded sand with silt, SP-SM	YELLOWISH BROWN	SFT	WET		OVA 0.0	
32	9									
31	10		85	Poorly graded sand with silt, SP-SM	YELLOWISH BROWN	SFT	WET	1 1 1 1	OVA 0.0	

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 52.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: W. BREW
WELL ID	: 11GW11A	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343128.0000 surveyed	DRILLING RIG	: NONE
EASTING	: 2562000.0000 surveyed	DATE STARTED	: 06/11/92
ELEVATION	: 41.200 surveyed	DATE COMPLETED	: 06/11/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Poorly graded sand with silt, SP-SM	YELLOWISH BROWN	SFT	WET		OVA 0.0	
30	11			Lean clay, CL		FRM	MST			
29	12			Lean clay, CL		FRM	MST		OVA 0.0	
28	13		90	Lean clay, CL		FRM	MST	2 3 3 5	OVA 0.0	
27	14									
26	15		75	Lean clay, CL		FRM	MST	1 3 3 5	OVA 0.0	Fine sand lenses.
25	16									
24	17			Interval Not Sampled						
23	18									
22	19									
21	20		95	Lean clay, CL		FRM	MST	2 5 3 4	OVA 0.0	Silt lenses.

Borehole Log **ROY F. WESTON, Inc.**

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 52.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: W. BREW
WELL ID	: 11GW11A	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343128.0000 surveyed	DRILLING RIG	: NONE
EASTING	: 2562000.0000 surveyed	DATE STARTED	: 06/11/92
ELEVATION	: 41.200 surveyed	DATE COMPLETED	: 06/11/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Lean clay, CL		FRM	MST		OVA 0.0	Silt lenses.
20	21									
				Shelly clay		FRM	MST		OVA 0.0	Gravel = shells.
19	22			Interval Not Sampled						
18	23									
17	24									
16	25		95	Shelly Hash		FRM	MST	2 3 4 3	OVA 0.0	Shells.
15	26									
14	27			Interval Not Sampled						
13	28									
12	29									
11	30		95	Shelly Hash	GRAY	FRM	MST	2 2 5 9	OVA 0.0	

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 52.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: W. BREW
WELL ID	: 11GW11A	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343128.0000 surveyed	DRILLING RIG	: NONE
EASTING	: 2562000.0000 surveyed	DATE STARTED	: 06/11/92
ELEVATION	: 41.200 surveyed	DATE COMPLETED	: 06/11/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Shelly Hash	GRAY	FRM	MST		OVA 0.0	
10	31									
9	32			Interval Not Sampled						
8	33									
7	34									
6	35		100	Shelly Hash	GRAY	FRM	MST	1 1 3 5	OVA 0.0	
5	36									
4	37			Interval Not Sampled						
3	38									
2	39									
1	40		100	Shelly Clay	GRAY	SFT	MST	5 6 7 10	OVA 0.0	

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 52.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: W. BREW
WELL ID	: 11GW11A	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343128.0000 surveyed	DRILLING RIG	: NONE
EASTING	: 2562000.0000 surveyed	DATE STARTED	: 06/11/92
ELEVATION	: 41.200 surveyed	DATE COMPLETED	: 06/11/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Shelly Clay	GRAY	SFT	MST		OVA 0.0	
0	41									
				Shell Hash	GRAY	FRM	WET			Gravel = shells
-1	42			Interval Not Sampled						
-2	43									
-3	44									
-4	45		90	Shell hash	GRAY	FRM	WET	1 5 7 9	OVA 0.0	Gravel = shells
-5	46									
-6	47			Interval Not Sampled						
-7	48									
-8	49									
-9	50		90	Shell Hash	GRAY	FRM	WET	1 2 1 3	OVA 0.0	Gravel = shells.

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 52.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: W. BREW
WELL ID	: 11GW11A	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343128.0000 surveyed	DRILLING RIG	: NONE
EASTING	: 2562000.0000 surveyed	DATE STARTED	: 06/11/92
ELEVATION	: 41.200 surveyed	DATE COMPLETED	: 06/11/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Shell Hash	GRAY	FRM	WET		OVA 0.0	Gravel = shells.
-9	51									
-10	52									
-11	53									
-12	54									
-13	55									
-14	56									
-15	57									
-16	58									
-17	59									
-18	60									

DATE: 12/08/92 **** LITHOLOGICAL DATA FOR - CLIENT ID: BAKER *** PAGE: 2

BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)		SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
11GW11A	1	1	0.00	2.00	SPS	F	10	MF	80	10	0	0			MOD	LSE	DRY	
11GW11A	2	1	2.00	4.00	SPS	F	10	MF	80	10	0	0			MOD	LSE	DRY	
11GW11A	3	1	4.00	5.00	SPS	F	10	MF	80	10	0	0			MOD	LSE	DRY	
11GW11A	3	2	5.00	6.00	SPS		0	F	90	10	0	0			MOD	SFT	WET	
11GW11A	4	1	6.00	8.00	SPS		0	F	90	10	0	0			MOD	SFT	WET	
11GW11A	5	1	8.00	10.00	CUT		0	F	90	10	0	0			MOD	SFT	WET	
11GW11A	6	1	10.00	11.00	SPS		0	F	90	10	0	0			MOD	SFT	WET	
11GW11A	6	2	11.00	12.00	SPS		0	F	10	10	80	0		MOD		FRM	MST	
11GW11A	7	1	12.00	13.00	SPS		0	F	10	10	80	0		MOD		FRM	MST	
11GW11A	8	1	13.00	15.00	SPS		0		0	5	95	0		MOD		FRM	MST	
11GW11A	9	1	15.00	17.00	SPS		0		0	0	100	0		MOD		FRM	MST	
11GW11A	10	1	17.00	20.00	NS		0		0	0	0	0						
11GW11A	11	1	20.00	21.80	SPS		0		0	0	100	0		MOD		FRM	MST	
11GW11A	11	2	21.80	22.00	SPS	CMF	30		0	0	70	0		MOD	POR	FRM	MST	
11GW11A	12	1	22.00	25.00	NS		0		0	0	0	0						
11GW11A	13	1	25.00	27.00	SPS	CMF	40		0	60	0	0		MOD	POR	FRM	MST	
11GW11A	14	1	27.00	30.00	NS		0		0	0	0	0						
11GW11A	15	1	30.00	32.00	SPS	CMF	60		0	20	20	0		MOD	POR	FRM	MST	
11GW11A	16	1	32.00	35.00	NS		0		0	0	0	0						
11GW11A	17	1	35.00	37.00	SPS	CMF	60		0	20	20	0		MOD	POR	FRM	MST	
11GW11A	18	1	37.00	40.00	NS		0		0	0	0	0						
11GW11A	19	1	40.00	41.40	SPS		0	F	30	30	40	0		LOW	POR	SFT	MST	
11GW11A	19	2	41.40	42.00	SPS	M	20	F	60	20	0	0		LOW	POR	FRM	WET	
11GW11A	20	1	42.00	45.00	NS		0		0	0	0	0						
11GW11A	21	1	45.00	47.00	SPS	M	20	F	60	20	0	0		LOW	POR	FRM	WET	
11GW11A	22	1	47.00	50.00	NS		0		0	0	0	0						
11GW11A	23	1	50.00	52.00	SPS	M	20	F	60	20	0	0		LOW	POR	FRM	WET	

Dames & Moore

LOCATION OF BORING	JOB NO.	CLIENT	LOCATION
	13542	Lantdiv, US. Navy	NWS. Yorktown, VA

DRILLING METHOD: MC 45 7± HSA.

BORING NO. NW 17G-

SHEET 1 OF 2

SAMPLING METHOD: 24" split spoon

WATER LEVEL	4.5-5 ft			
TIME				
DATE				
CASING DEPTH				

DRILLING

START	FINISH
TIME 9:00	TIME 11:30
DATE 12-9-85	DATE 12-9-8

DATUM

ELEVATION

SURFACE CONDITIONS:

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT. SAMPLER	NUMBER OF RINGS	DEPTH IN FEET	SOIL GRAPH	
	18			2 4 4 (8)		0 1	SM	Brown silty med to coarse SAND - mostly SAND rounded grains, LOOSE
	18			4 4 2 (6)		2 3		Lt Brown to orange brown silty ~~fine~~ to SAND med and coarse sand - dominated by rounded coarse sand LOOSE
	18			4 4 5 (9)		4 5	SP	saturated sample - ~~silty~~ fairly clean (little amount of fines) medium to coarse SAND, some gravel present, LOOSE
						6 7 8 9		
				2 3 3 (6)		10 11 12	SM	clean white fine to medium SAND orange brown fine SAND w/ silt grey-green glaconitic (silty) fine sand, LOOSE
						13 14		
				3 4 4 (8)		15 16 17	SC CL/ML	shelly calcareous (shell frags) glauconitic clayey SANDS varved grey green (3-5 mm), brown + green (5-15 m clayey silt, STIFF
						18 19 20		

No. 28443

DRILLING CONTR.

BY

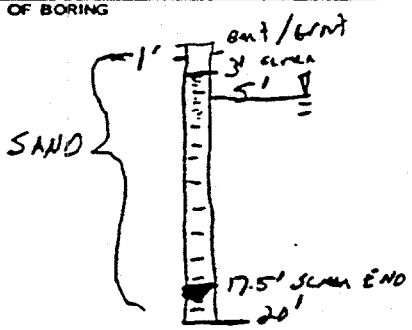
DATE

CHK'D BY

628.1 (3) (REV. 11-80)

Dames & Moore

LOCATION OF BORING



DATUM

ELEVATION

JOB NO.	CLIENT	LOCATION
13542	LANTDIV, US. NAVY	NWS Yorktown, VA

DRILLING METHOD: MC 45 7½ H.S.A NW

BORING NO. 17GW01

SHEET 2 OF 2

SAMPLING METHOD: 24" Spl. sp

WATER LEVEL				
TIME				
DATE				
CASING DEPTH				

DRILLING	
START TIME	FINISH TIME
DATE 12-9-85	DATE

SURFACE CONDITIONS:

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT. SAMPLER	NUMBER OF RINGS	DEPTH IN FEET	SOIL GRAPH	
				3		20	SM	shelly glaconitic loose silty fine sands - green
				U 5		21		grey-green clayey silts to fine SAND - ~~gre~~ NO shell fragments present, much micaceous minerals present
						22		
						23		
						24		
						25		
						6		
						7		
						8		
						9		
						0		
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		

DRILLING CONTR.

NO. LOTT

BY

DATE

CHK'D BY

828.1 (3) (REV. 11-80)

Dames & Moore

JOB NO.	CLIENT	LOCATION
13542	LANTDIV - US NAVY	NWS Yorktown, VA

BORING NO.	SHEET
17GW02	1 OF 1

DRILLING METHOD: MC 45 NW
7½ H.S.A

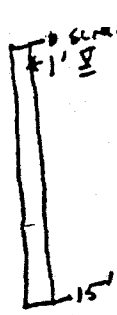
SAMPLING METHOD: 24" split spoon
140 lbs Hammer

DRILLING	START	FINISH
TIME	13:15	14:00
DATE	12-9-85	12-9-85

WATER LEVEL	1'			
TIME	13:30			
DATE	12-9-85			
CASING DEPTH				

TION OF BORING

screen top
1' ▽
15'



ELEVATION

SURFACE CONDITIONS:

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT. SAMPLER	NUMBER OF RINGS	DEPTH IN FEET	SOIL GRAPH	
						0	OL	13" of organic - old piece of decayed wood
				3 2 4 5 6		1	SM	→ saturated at 1-1.5' Tan silty sand (medium to coarse w/ large gravel - well rounded, LOOSE
						2		→ saturated → Tan silty coarse to fine sand w/ gravel present 2-5 mm well graded, MEDIUM DENSE
				2 2 4 6		3		
						4		Tan to orange brown very silty fine to med sand - well graded, LOOSE
						5		
						6		
						7		
						8		
						9		
						0		grey v. silty (possible clay) fine to med SAND little coarse, much fine SAND, LOOSE
				2 2 3 5		1		
						2		
						3		
						4		
						5		End of grey sand
				2 2 3 5		6	ML	grey green glaconitic material fine silts to clays, MEDIUM STIFF
						7		Very micaceous
						8		
						9		
						0		

CHK'D BY
DATE
BY

BOREHOLE ID : 17GW10 *SITE NAME/NO:* WPNSTA YORKTOWN
BEGIN DATE : 06/06/92 *END DATE :* 06/06/92

LOGGER/COMPANY : J.H. GHENT

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 12.00 *DEPTH TO BEDROCK :* 0.00

BOREHOLE DIAMETER #1: 12.00
INTERVAL: 0.00 ft. to 14.00 ft. BGS
METHOD : HSA *FLUID :* NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : *FLUID :*
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : *FLUID :*

DRILLING COMPANY : HARDIN-HUBER
DRILLER : ROYCE KEENAN
DRILL RIG TYPE : MOBILE B-47

	ESTIMATED	*SURVEYED*
SURFACE ELEVATION :	0.000	38.600
N. COORDINATE :	0.0000	343795.0000
E. COORDINATE :	0.0000	2561672.0000

WELL PERMIT.....(Y)es (N)o: N *PERMIT # :*

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: Y
WELL CLUSTER.....(Y)es (N)o: N *No. OF WELLS :* 0
WELL NEST.....(Y)es (N)o: N *No. OF WELLS :* 0
PUMPS INSTALLED..(Y)es (N)o: N

	TYPE	*DEPTH*
PURGE :		0.00
SAMPLE :		0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

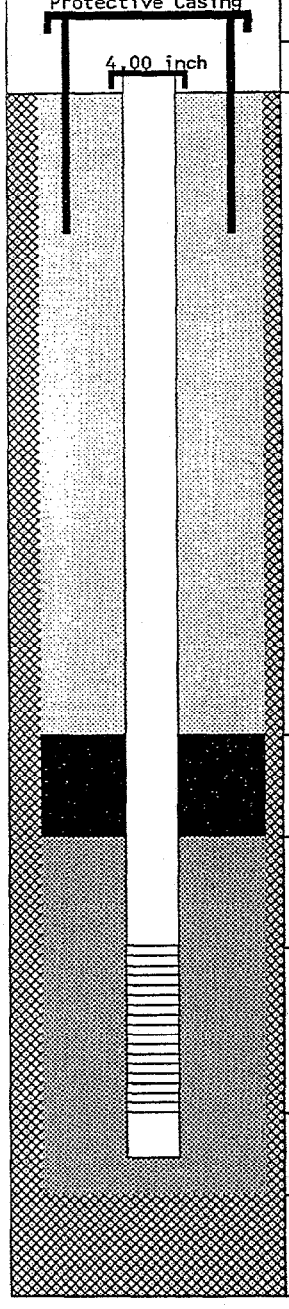
COMMENTS :
Hole initially augered with 9 inch augers, overdrilled with 12 inch O.D. augers.

Well Completion Summary

ROY F. WESTON, Inc.

CLIENT	WPNSTA YORKTOWN	*DRILLING FIRM*	HARDIN-HUBER
SITE NAME	WPNSTA YORKTOWN	*INSPECTOR*	J. WILLIAMS

WELL ID	17GW10	*WATER LEVELS*	
START DATE	06/06/92	2.10 FT (TOC) ON 06/06/92	
COMPLETION DATE	06/06/92		



DEPTH		ELEV.
2.10	TC	40.70
0.00	GS	38.60
1.00	BN	37.60
1.50	SP	37.10
2.00	SC	36.60
11.00	BS	27.60
11.00	TD	27.60

DRILLING SUMMARY

Driller ROYCE KEEMAN
Drilling Fluid NONE
Well Type SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 *inch* *Interval:* 0.00 to 2.00 *ft.*
Type : PVC SCH 40

Stick Up Inner Casing: 2.10 *ft.* *Protective Casing:* 0.00 *ft.*

Casing Grout: CEMT/BENT *Interval:* 0.00 to 1.00 *ft.*

Seal Type: BENTONITE PELLETS *Interval:* 1.00 to 1.50 *ft.*

Sand Pack Type : #2 VA *Interval:* 1.50 to 11.00 *ft.*
Grain Size : UNIFORM *Median Diameter:* 2.4
Screen Diameter: 2.00 *Interval:* 2.00 to 11.00 *ft.*
Type : PVC *Slots:* 0.020 *inches*

Silt Trap Interval: 0.00 to 0.00 *ft.*
Backfill Type : *Interval:* 0.00 to 0.00 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth
= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:
9' screen, 1 bucket pellets, lb bags #2 sand.

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

01/06/93

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 12.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: J.H. GHENT
WELL ID	: 17GW10	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343795.0000 surveyed	DRILLING RIG	: MOBILE B-47
EASTING	: 2561672.0000 surveyed	DATE STARTED	: 06/06/92
ELEVATION	: 38.600 surveyed	DATE COMPLETED	: 06/06/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			97	Fill	BLACK/BROWN	LSE	MST	2 3 2 5	OVA 0.0	Sample time 0925, ceramic pipe fragments at 1' organics black soil & roots to 0.8'.
37	1									
				Poorly graded sand with silt, SP-SM	BROWNISH YELLOW	LSE	MST		OVA 0.0	
36	2		70	Silty sand, SM	STRONG BROWN	LSE	SAT	7 10 11 13	OVA 0.0	
				Silty sand, SM	REDDISH YELLOW	LSE	SAT		OVA 0.0	
35	3									
34	4		70	Poorly graded sand, SP	GRAY	FRM	WET	2 3 4 2	OVA 0.0	
33	5									
32	6		95	Poorly graded sand with silt, SP-SM	GRAY	SFT	SAT	4 2 3 2		
				Silt, ML	OLIVE GREEN	FRM	WET		OVA 0.0	
31	7									
30	8			No Sample Recovered						
			95	Elastic silt, MH	OLIVE GREY	FRM	WET	1 1 1 1		Laminated near bottom 5' of spoon, brown iron stained.
29	9									
28	10			No Sample Recovered						

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 12.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: J.H. GHENT
WELL ID	: 17GW10	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343795.0000 surveyed	DRILLING RIG	: MOBILE B-47
EASTING	: 2561672.0000 surveyed	DATE STARTED	: 06/06/92
ELEVATION	: 38.600 surveyed	DATE COMPLETED	: 06/06/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			100	Not Classified - Incomplete Data				1 2 2 3		
27	11			Shelly clay	GRAY	STF	MST		OVA 0.0	Shelly clay.
26	12		100	Lean clay, CL	GREENISH GREY	STF	MST	2 3 3 4	OVA 0.0	Iron staining apparent in upper portion. Time 0910.
25	13									
24	14									
23	15									
22	16									
21	17									
20	18									
19	19									
18	20									

DATE: 12/08/92 **** LITHOLOGICAL DATA FOR - CLIENT ID: BAKER *** PAGE: 7

BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)		SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
17GW10	1	1	0.00	1.50	SPS		10		50	20	5	15		NON	POR	LSE	MST	
17GW10	1	2	1.50	2.00	SPS	F	0		90	10	0	0		NON	WEL	LSE	MST	
17GW10	2	1	2.00	2.50	SPS	C	5	MF	70	10	5	10		NON	POR	LSE	SAT	
17GW10	2	2	2.50	4.00	SPS		0	MF	80	20	0	0		NON	MOD	LSE	SAT	
17GW10	3	1	4.00	6.00	SPS	F	5	MF	90	5	0	0		NON	MOD	FRM	WET	
17GW10	4	1	6.00	6.60	SPS		0	F	90	10	0	0		NON	WEL	SFT	SAT	
17GW10	4	2	6.60	7.90	SPS		0		0	50	50	0		LOW	WEL	FRM	WET	
17GW10	4	3	7.90	8.00	SPS		0		0	0	0	0						
17GW10	5	1	8.00	9.90	SPS		0		0	50	50	0		MOD		FRM	WET	
17GW10	5	2	9.90	10.00	SPS		0		0	0	0	0						
17GW10	6	1	10.00	10.80	SPS		0		0	0	0	0						
17GW10	6	2	10.80	12.00	SPS	F	0		0	15	80	5		MOD		STF	MST	
17GW10	7	1	12.00	14.00	SPS	F	0		0	5	85	10		MOD		STF	MST	

BOREHOLE ID : 17GW16 SITE NAME/NO: WPNSTA YORKTOWN
BEGIN DATE : 06/08/92 END DATE : 06/08/92

LOGGER/COMPANY : W. BREW

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 14.00 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 12.00
INTERVAL: 0.00 ft. to 14.00 ft. BGS
METHOD : HSA FLUID : NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : FLUID :
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : HARDIN-HUBER
DRILLER : ROYCE KEENAN
DRILL RIG TYPE :

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	0.000	45.200
N. COORDINATE :	0.0000	343442.0000
E. COORDINATE :	0.0000	2561678.0000

WELL PERMIT.....(Y)es (N)o: N PERMIT # :

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: Y
WELL CLUSTER.....(Y)es (N)o: N No. OF WELLS : 0
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N TYPE DEPTH
PURGE : 0.00
SAMPLE : 0.00

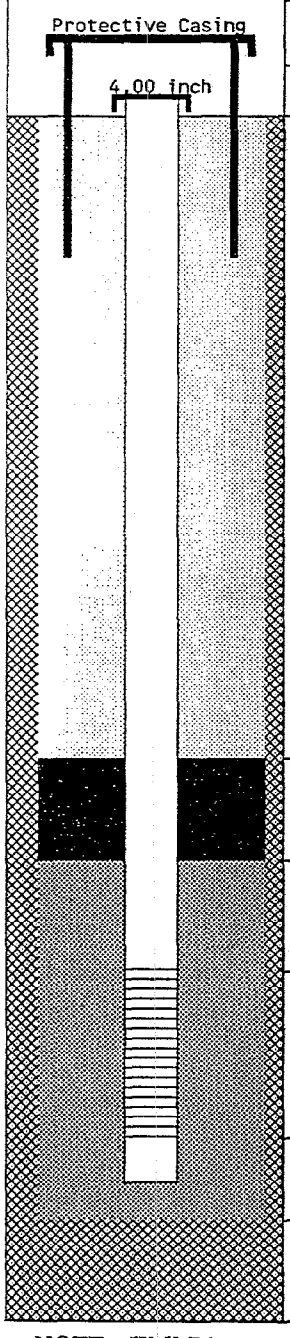
BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :
Overdrilling hole w/12 inch o.d. to install well.

Well Completion Summary **ROY F. WESTON, Inc.**

CLIENT	WPNSTA YORKTOWN	*DRILLING FIRM*	HARDIN-HUBER
SITE NAME	WPNSTA YORKTOWN	*INSPECTOR*	W. BREW

WELL ID	17GW16	*WATER LEVELS*
START DATE	06/08/92	
COMPLETION DATE	06/08/92	



DEPTH		ELEV.
2.50	*TC*	47.70
0.00	*GS*	45.20
1.00	*BN*	44.20
2.00	*SP*	43.20
3.00	*SC*	42.20
13.00	*BS*	32.20
13.00	*TD*	32.20

DRILLING SUMMARY

Driller ROYCE KEEMAN
Drilling Fluid
Well Type SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 *inch* *Interval:* 0.00 to 3.00 *ft.*
Type : PVC SCH 40

Stick Up Inner Casing: 2.50 *ft.* *Protective Casing:* 0.00 *ft.*

Casing Grout: CEMT/BENT *Interval:* 0.00 to 1.00 *ft.*

Seal Type: BENTONITE *Interval:* 1.00 to 2.00 *ft.*

Sand Pack Type : #2 SAND *Interval:* 2.00 to 13.00 *ft.*
Grain Size : UNIFORM *Median Diameter:*
Screen Diameter: 4.00 *Interval:* 3.00 to 13.00 *ft.*
Type : PVC *Slots:* .020 *inches*

Silt Trap Interval: 0.00 to 0.00 *ft.*
Backfill Type : *Interval:* 0.00 to 0.00 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth
= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:

NOTE: Well Diagram not to Scale *Elevations are feet above mean sea level*

01/06/93

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 14.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: W. BREW
WELL ID	: 17GW16	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343442.0000 surveyed	DRILLING RIG	:
EASTING	: 2561678.0000 surveyed	DATE STARTED	: 06/08/92
ELEVATION	: 45.200 surveyed	DATE COMPLETED	: 06/08/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			75	Silty sand, SM	DARK BROWN	FRM	MST	5 6 6 5	OVA 0.0	
44	1									
43	2		75	Silty sand, SM	DARK BROWN	FRM	MST		OVA 0.0	
42	3									
				Poorly graded sand with silt, SP-SM	LT YLLWISH BRN	LSE	DRY		OVA 0.0	
41	4		60	Poorly graded sand with silt, SP-SM	LT YLLWISH BRN	LSE	DRY	2 4 3 4	OVA 0.0	
40	5									
				Poorly graded sand with silt, SP-SM		LSE	WET		OVA 0.0	
39	6		60	Poorly graded sand with silt, SP-SM		LSE	WET	3 3 4 5	OVA 0.0	
38	7			Well-graded sand, SW	DK YLLWISH BRN	SFT	WET		OVA 0.0	
37	8		70	Well-graded sand, SW	DK YLLWISH BRN	SFT	WET	2 3 3 3	OVA 0.0	
36	9			Poorly graded sand, SP	YELLOWISH BROWN	SFT	WET		OVA 0.0	
35	10		65	Poorly graded sand, SP	YELLOWISH BROWN	SFT	WET	3 3 3 3	OVA 0.0	

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 14.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: W. BREW
WELL ID	: 17GW16	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343442.0000 surveyed	DRILLING RIG	:
EASTING	: 2561678.0000 surveyed	DATE STARTED	: 06/08/92
ELEVATION	: 45.200 surveyed	DATE COMPLETED	: 06/08/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Poorly graded sand, SP	YELLOWISH BROWN	SFT	WET		OVA 0.0	
34	11			Poorly graded sand, SP	LT BRWNSH GRY	LSE	WET		OVA 0.0	
33	12		55	Poorly graded sand, SP	LT BRWNSH GRY	LSE	WET	1 1 1 1	OVA 0.0	
32	13			Lean clay with sand, CL	V DK GRYSH BRN	FRM	WET		OVA 0.0	
31	14									
30	15									
29	16									
28	17									
27	18									
26	19									
25	20									

DATE: 12/08/92 **** LITHOLOGICAL DATA FOR - CLIENT ID: BAKER *** PAGE: 8

BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)		SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
17GW16	1	1	0.00	2.00	SPS		0		80	15	5	0		LOW	POR	FRM	MST	
17GW16	2	1	2.00	3.30	SPS		0		80	15	5	0		LOW	POR	FRM	MST	
17GW16	2	2	3.30	4.00	SPS	F	0		90	10	0	0			WEL	LSE	DRY	
17GW16	3	1	4.00	5.50	SPS		0	F	90	10	0	0			WEL	LSE	DRY	
17GW16	3	2	5.50	6.00	SPS		0	M	90	10	0	0			MOD	LSE	WET	
17GW16	4	1	6.00	7.00	SPS		0	M	90	10	0	0			MOD	LSE	WET	
17GW16	4	2	7.00	8.00	SPS	M	10	MF	85	5	0	0			POR	SFT	WET	
17GW16	5	1	8.00	8.80	SPS	M	10	MF	85	5	0	0			POR	SFT	WET	
17GW16	5	2	8.80	10.00	SPS		0		95	5	0	0			MOD	SFT	WET	
17GW16	6	1	10.00	11.00	SPS		0		95	5	0	0			MOD	SFT	WET	
17GW16	6	2	11.00	12.00	SPS		0	F	95	5	0	0			MOD	LSE	WET	
17GW16	7	1	12.00	13.30	SPS		0	F	95	5	0	0			MOD	LSE	WET	
17GW16	7	2	13.30	14.00	SPS		0	F	15	10	75	0		MOD		FRM	WET	

BOREHOLE ID : 17HP01 *SITE NAME/NO:* WPNSTA YORKTOWN
BEGIN DATE : 06/23/92 *END DATE :* 06/23/92

LOGGER/COMPANY : H.G. BIENKOWSKI

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 10.00 *DEPTH TO BEDROCK :* 0.00

BOREHOLE DIAMETER #1: 3.00
INTERVAL: 0.00 ft. to 6.00 ft. BGS
METHOD : SPLIT SPOON *FLUID :* NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : *FLUID :*
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : *FLUID :*

DRILLING COMPANY : HARDIN-HUBER
DRILLER : BRIAN SIWINSKI
DRILL RIG TYPE : MOBILE DRILL B61

	ESTIMATED	*SURVEYED*
SURFACE ELEVATION :	0.000	44.300
N. COORDINATE :	0.0000	343599.0000
E. COORDINATE :	0.0000	2561497.0000

WELL PERMIT.....(Y)es (N)o: N *PERMIT # :*

HOLE ABANDONED...(Y)es (N)o: Y
WELL INSTALLED...(Y)es (N)o: N
WELL CLUSTER.....(Y)es (N)o: N *No. OF WELLS :* 0
WELL NEST.....(Y)es (N)o: N *No. OF WELLS :* 0
PUMPS INSTALLED..(Y)es (N)o: N *TYPE* *DEPTH*
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :
Split-spoon sampled to 6 ft. Drove a hydropunch from 5 to 10 ft. Borehole grouted to surface.

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: WPNSTA YORKTOWN	TOTAL DEPTH	: 10.00
SITE NAME	: WPNSTA YORKTOWN	LOGGER	: H.G. BIENKOWSKI
WELL ID	: 17HP01	DRILLING COMPANY	: HARDIN-HUBER
NORTHING	: 343599.0000 surveyed	DRILLING RIG	: MOBILE DRILL B61
EASTING	: 2561497.0000 surveyed	DATE STARTED	: 06/23/92
ELEVATION	: 44.300 surveyed	DATE COMPLETED	: 06/23/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			100	Sandy silt, ML	BROWN	SFT	MST	3 3 3 3	OVA 0.0	
				Silty sand, SM	YELLOWISH BROWN	SFT	WET		OVA 0.0	
43	1									
42	2		95	Silty sand, SM	YELLOWISH BROWN	SFT	WET	6 6 4 6	OVA 0.0	
41	3									
40	4			No Sample Recovered						
			62	Silty sand, SM	YELLOWISH BROWN	SFT	SAT	8 8 6 8	OVA 0.0	Saturated below 4.6 ft, wet above.
39	5									
				No Sample Recovered						
38	6			Interval Not Sampled						Hydropunch set 5-10 ft. Note screen open from 6-10 ft. below surface.
37	7									
36	8									
35	9									
34	10									

DATE: 12/08/92 **** LITHOLOGICAL DATA FOR - CLIENT ID: BAKER *** PAGE: 9

BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)		SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
17HP01	1	1	0.00	0.50	SPS		0	MF	30	50	0	20		NA	NA	SFT	MST	
17HP01	1	2	0.50	2.00	SPS		0	CMF	70	15	15	0		NA	POR	SFT	WET	
17HP01	2	1	2.00	3.90	SPS		0	CMF	80	20	0	0		NA	POR	SFT	WET	
17HP01	2	2	3.90	4.00	SPS		0		0	0	0	0						
17HP01	3	1	4.00	5.25	SPS	F	5	CMF	80	15	0	0		NA	MOD	SFT	SAT	
17HP01	3	2	5.25	6.00	SPS		0		0	0	0	0						
17HP01	4	1	6.00	10.00	NS		0		0	0	0	0						

APPENDIX B
ROUND TWO WELL DEVELOPMENT FORMS AND ROUND TWO PURGING FIELD PARAMETER MEASUREMENTS FOR GROUNDWATER SAMPLING

APPENDIX B.1
ROUND TWO WELL DEVELOPMENT FORMS

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc.

PROJECT: RI FOR SITES 11-17

CTO NO.: 62470-0354 WELL NO.: 11GW03

DATE: 10-10-96

GEOLOGIST/ENGINEER: DAVID J. MARTIN

TIME START	1326
TIME FINISH	1350
INITIAL WATER LEVEL (FT)	3.88
TOTAL WELL DEPTH (TD)	14.6
WELL DIAMETER (INCHES)	2.0
CALCULATED WELL VOLUME	1.7 GAL.
BOREHOLE DIAMETER (INCHES)	
BOREHOLE VOLUME	
AMOUNT OF WATER ADDED DURING DRILLING	
DEVELOPMENT METHOD	
PUMP TYPE	WATERRA PUMP
TOTAL TIME (A)	24 MIN
AVERAGE FLOW (GPM)(B)	
TOTAL ESTIMATED WITHDRAWAL AxB=	
HNU/OVA READING	

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1326	0	6.36	17.8	67.5	18.0	LT. BROWN SULFUR MODERATE TURB. SMELL
1341	21.7	6.13	17.7	500	18.0	"
1346	23.4	6.07	17.8	500	18.0	"
1350	25.1	6.10	18.1	500	18.0	"

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc.

PROJECT: RI FOR SITES 11, 17

CTO NO.: 62470-0354 WELL NO.: 116W09

DATE: 11-13-96

GEOLOGIST/ENGINEER: CHRIS W. TURNER

TIME START: 1045

TIME FINISH: 1115

INITIAL WATER LEVEL (FT): 11.02

TOTAL WELL DEPTH (TD): 21.34

WELL DIAMETER (INCHES): 2.0

CALCULATED WELL VOLUME: 1.68 GAL.

BOREHOLE DIAMETER (INCHES):

BOREHOLE VOLUME:

AMOUNT OF WATER ADDED DURING DRILLING:

DEVELOPMENT METHOD:

PUMP TYPE: WATERRA PUMP

TOTAL TIME (A): 30 MIN

AVERAGE FLOW (GPM)(B):

TOTAL ESTIMATED WITHDRAWAL AxB=:

HNU/OVA READING:

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1045	5	3.97	12.2	52	15.0	LIGHT TAN VERY TURBID - SED.
1050	8	3.99	12.7	57	15.8	"
1055	12.5	3.73	11.9	52	15.0	"
1100	17	3.81	13.0	57	14.6	"
1106	20	3.91	12.8	57	14.8	"
1115	25	4.09	13.8	52	14.9	"

OBSERVATIONS/NOTES

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Remedial Investigation Sites 1 & 3

CTO NO.: 0318 WELL NO.: 116W11

DATE: 30 Jan 96

GEOLOGIST/ENGINEER: J. Golden / B. Cummings

	DEVELOPMENT DATA						
TIME START 1210	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
TIME FINISH 1321	1220	6	5.07	9.8	56	11.1	clear
INITIAL WATER LEVEL (FT) 7.12	1246	12	5.00	8.7	54	10.7	"
TOTAL WELL DEPTH (TD) 15.08	1302	18	4.83	9.3	55	10.3	"
WELL DIAMETER (INCHES) 4	1312	24	5.03	8.9	62	10.5	"
CALCULATED WELL VOLUME 5.3	1321	30	5.03	9.4	65	10.8	Clear
BOREHOLE DIAMETER (INCHES) 8							
BOREHOLE VOLUME —							
AMOUNT OF WATER ADDED DURING DRILLING none							
DEVELOPMENT METHOD pump							
PUMP TYPE Waterra							
TOTAL TIME (A)							
AVERAGE FLOW (GPM)(B)							
TOTAL ESTIMATED WITHDRAWAL AxB=							
HNU/OVA READING							

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc.

PROJECT: RI FOR SITE 11+17

CTO NO.: 62470-0354 WELL NO.: 11GW11A

DATE: 1-28-96

GEOLOGIST/ENGINEER: DAVID J. MARTIN

TIME START	1547
TIME FINISH	1704
INITIAL WATER LEVEL (FT)	26.1
TOTAL WELL DEPTH (TD)	51.4
WELL DIAMETER (INCHES)	2.0"
CALCULATED WELL VOLUME	4.1 GAL.
BOREHOLE DIAMETER (INCHES)	
BOREHOLE VOLUME	
AMOUNT OF WATER ADDED DURING DRILLING	
DEVELOPMENT METHOD	WATERRA PUMP
PUMP TYPE	
TOTAL TIME (A)	77 MIN
AVERAGE FLOW (GPM)(B)	
TOTAL ESTIMATED WITHDRAWAL AxB =	
HNU/OVA READING	

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1547	5	10.51	14.6	110	14.5	GRAY TURBID
1556	10	10.15	15.9	120	14.5	"
1603	15	10.05	13.4	120	14.0	"
1613	20	9.99	14.8	120	14.0	"
1620	25	10.08	14.6	120	14.0	"
1627	30	9.90	14.3	120	14.0	"
1638	35	9.87	13.9	120	14.0	"
1651	40	9.84	14.1	120	14.0	"
1704	45	9.84	13.1	120	14.0	"

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc.

PROJECT: RI FOR SITES 11 + 17

CTO NO.: 62470 - 0354 WELL NO.: 176W01

DATE: 11-13-96

GEOLOGIST/ENGINEER: CHRIS W. TURNER

TIME START	1555
TIME FINISH	1635
INITIAL WATER LEVEL (FT)	8.34
TOTAL WELL DEPTH (TD)	19.26
WELL DIAMETER (INCHES)	2.0
CALCULATED WELL VOLUME	1.78 GAL.
BOREHOLE DIAMETER (INCHES)	
BOREHOLE VOLUME	
AMOUNT OF WATER ADDED DURING DRILLING	
DEVELOPMENT METHOD	
PUMP TYPE	WATERRA PUMP
TOTAL TIME (A)	40 MIN.
AVERAGE FLOW (GPM)(B)	
TOTAL ESTIMATED WITHDRAWAL AxB=	
HNU/OVA READING	

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1555	5	6.16	15.4	178	15.1	BROWN TURBID
1603	10	6.19	15.4	168	15.1	"
1610	15	6.24	14.6	166	15.9	CLEARING
1620	20	6.28	15.0	168	15.1	"
1625	25	6.29	14.6	165	15.1	"
1635	30	6.34	14.5	163	15.0	CLOUDY

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc.

PROJECT: RI FOR SITES 11-17

CTO NO.: 62470-0354 WELL NO.: 17GW02

DATE: 11-13-96

GEOLOGIST/ENGINEER: CHRIS W. TURNER

TIME START	1427
TIME FINISH	1506
INITIAL WATER LEVEL (FT)	5.23
TOTAL WELL DEPTH (TD)	15.27
WELL DIAMETER (INCHES)	2.0
CALCULATED WELL VOLUME	1.64 GAL.
BOREHOLE DIAMETER (INCHES)	
BOREHOLE VOLUME	
AMOUNT OF WATER ADDED DURING DRILLING	
DEVELOPMENT METHOD	
PUMP TYPE	WATERRA PUMP
TOTAL TIME (A)	39 MIN.
AVERAGE FLOW (GPM)(B)	
TOTAL ESTIMATED WITHDRAWAL AxB=	
HNU/OVA READING	

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1427	5	5.55	15.1	63	15.1	TURBID
1440	10	5.66	15.5	64	15.1	"
1445	15	5.78	15.2	69	16.0	CLOUDY
1450	17.5	5.79	14.1	70	16.1	"
1500	22.5	5.82	14.6	64	16.0	CLEAR
1506	25	5.83	14.5	66	15.1	"

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc.

PROJECT: RI FOR SITES 11 - 17

CTO NO.: 62470 - 0354 WELL NO.: 17GW10

DATE: 11-14-96

GEOLOGIST/ENGINEER: CHRIS W. TURNER

TIME START	0830
TIME FINISH	0905
INITIAL WATER LEVEL (FT)	3.28
TOTAL WELL DEPTH (TD)	13.29
WELL DIAMETER (INCHES)	2.0
CALCULATED WELL VOLUME	1.63 GAL.
BOREHOLE DIAMETER (INCHES)	
BOREHOLE VOLUME	
AMOUNT OF WATER ADDED DURING DRILLING	
DEVELOPMENT METHOD	
PUMP TYPE	WATERRA PUMP
TOTAL TIME (A)	35 MIN
AVERAGE FLOW (GPM)(B)	
TOTAL ESTIMATED WITHDRAWAL AxB =	
HNU/OVA READING	

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0830	5	6.66	12.3	600	13.0	CLEAR
0840	10	6.74	13.5	660	13.1	"
0848	15	6.76	14.0	660	13.9	YELLOW TINT
0856	20	6.80	14.2	660	13.8	"
0905	25	6.84	14.1	650	14.0	"

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc.

PROJECT: RI FOR SITES 11 + 17

CTO NO.: 62470-0354 WELL NO.: 17GW16

DATE: 11-13-96

GEOLOGIST/ENGINEER: CHRIS W. TURNER

TIME START	1320
TIME FINISH	1343
INITIAL WATER LEVEL (FT)	8.20
TOTAL WELL DEPTH (TD)	15.19
WELL DIAMETER (INCHES)	2.0
CALCULATED WELL VOLUME	1.14 GAL.
BOREHOLE DIAMETER (INCHES)	
BOREHOLE VOLUME	
AMOUNT OF WATER ADDED DURING DRILLING	
DEVELOPMENT METHOD	
PUMP TYPE	WATERRA PUMP
TOTAL TIME (A)	23 MIN.
AVERAGE FLOW (GPM)(B)	
TOTAL ESTIMATED WITHDRAWAL AxB=	
HNU/OVA READING	

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1320	5	5.88	21.6	68	18.0	yellow cloudy
1325	10	5.83	21.4	54	18.7	"
1330	15	5.85	20.4	58	18.1	"
1335	20	5.90	20.9	50	17.5	yellow slightly cloudy
1343	25	5.96	21.5	60	17.4	CLEAR

OBSERVATIONS/NOTES

APPENDIX B.2
ROUND TWO PURGING FIELD PARAMETER MEASUREMENTS FOR GROUNDWATER SAMPLING

SUMMARY OF FIELD PARAMETERS FOR GROUNDWATER SAMPLING RI FOR SITES 11 AND 17 YORKTOWN NAVAL WEAPONS STATION CONTRACT TASK ORDER 0354

Well Number	Well Volumes	Temperature (°C)	pH (S.U.)	Conductivity (µmhos\cm)	Dissolved Oxygen (mg\L)	Turbidity (N.T.U.)	Eh (mV)
11GW03	0	15.0	7.31	75	2.55	153.0	-26.4
	1	15.4	6.53	69	2.00	37.0	1.6
	2	14.9	6.22	66	2.10	17.0	33.2
	3	14.8	5.98	66	1.00	13.0	41.7
	4	15.0	5.89	66	1.50	10.0	49.0
11GW09	0	14.7	6.13	85	3.25	27.6	10.6
	1	15.3	5.19	90	4.00	3.6	88.0
	2	14.3	4.72	81	3.00	1.3	107.3
	3	14.5	5.19	81	3.00	0.9	88.5
11GW11	0	13.4	6.13	125	2.50	5.8	80.0
	1	13.9	5.48	72	4.25	3.2	79.4
	2	14.2	5.40	70	3.25	2.5	78.2
	3	14.2	5.35	73	2.75	2.1	72.1
11GW11A	0	13.5	6.45	145	1.00	200+	19.0
	3	13.3	6.14	144	3.30	200+	66.0
	6	13.7	6.31	141	1.50	200+	16.0
	8	13.4	6.26	143	2.25	200+	25.0
17GW01	0	14.4	6.04	131	4.75	3.9	48.4
	1	15.4	5.72	134	4.50	2.7	56.4
	2	15.7	5.73	130	4.75	3.0	59.2
	3	15.1	5.76	134	4.50	2.0	63.1

SUMMARY OF FIELD PARAMETERS FOR GROUNDWATER SAMPLING RI FOR SITES 11 AND 17 YORKTOWN NAVAL WEAPONS STATION CONTRACT TASK ORDER 0354

Well Number	Well Volumes	Temperature (°C)	pH (S.U.)	Conductivity (µmhos\cm)	Dissolved Oxygen (mg\L)	Turbidity (N.T.U.)	Eh (mV)
17GW02	0	16.0	5.78	85	2.50	32.6	58.6
	1	14.8	5.73	85	3.50	6.6	55.6
	2	13.8	5.97	89	3.75	3.0	46.4
	3	13.4	5.97	87	3.50	2.7	54.9
17GW10	0	13.8	6.76	51	5.50	12.3	4.6
	1	13.3	6.59	650	4.50	5.0	7.2
	2	12.9	6.64	660	5.50	4.7	3.0
	3	12.1	6.75	675	2.75	3.1	2.6
17GW16	0	16.1	6.72	94.40	4.50	15.8	19.0
	1	16.6	6.13	97.70	4.50	9.0	36.7
	2	15.7	6.07	97.30	5.00	6.4	39.8
	3	16.1	5.96	96.20	4.25	4.5	46.8

Notes:

°C = Degrees Centigrade
S.U. = Standard Units
mg/L = Milligrams per Liter
µmhos/cm = µmhos per Centimeter
N.T.U. = Nephelometric Turbidity Units
mV = millivolt
ppt = Parts per Thousand

APPENDIX C
HYDRAULIC GRADIENT CALCULATIONS AND DIAGRAMS

S.O. No. 62470 - 354

Subject: HYDRAULIC GRADIENT CALCULATIONS

Sheet No. ____ of ____

Drawing No. ____

Computed by KAT Checked By ____ Date 3-3-97

Baker

SITE 17

A)
w1 = 17GW16 - 39.60
w2 = 17GW01 - 38.11
w3 = 17GW02 - 37.47

B) $\frac{39.60 - 37.47}{330 \text{ FT.}} = 0.006$ SLOPE

C) $\frac{39.60 - 38.11}{0.006} = 230.84$ FT

D) $\frac{39.60 - 38.11}{240 \text{ FT.}} = 0.006 = \text{H.G.}$

SITE 1

A)
w1 = 11GW03 - 39.87
w2 = 11GW09 - 38.54
w3 = 11GW11 - 36.02

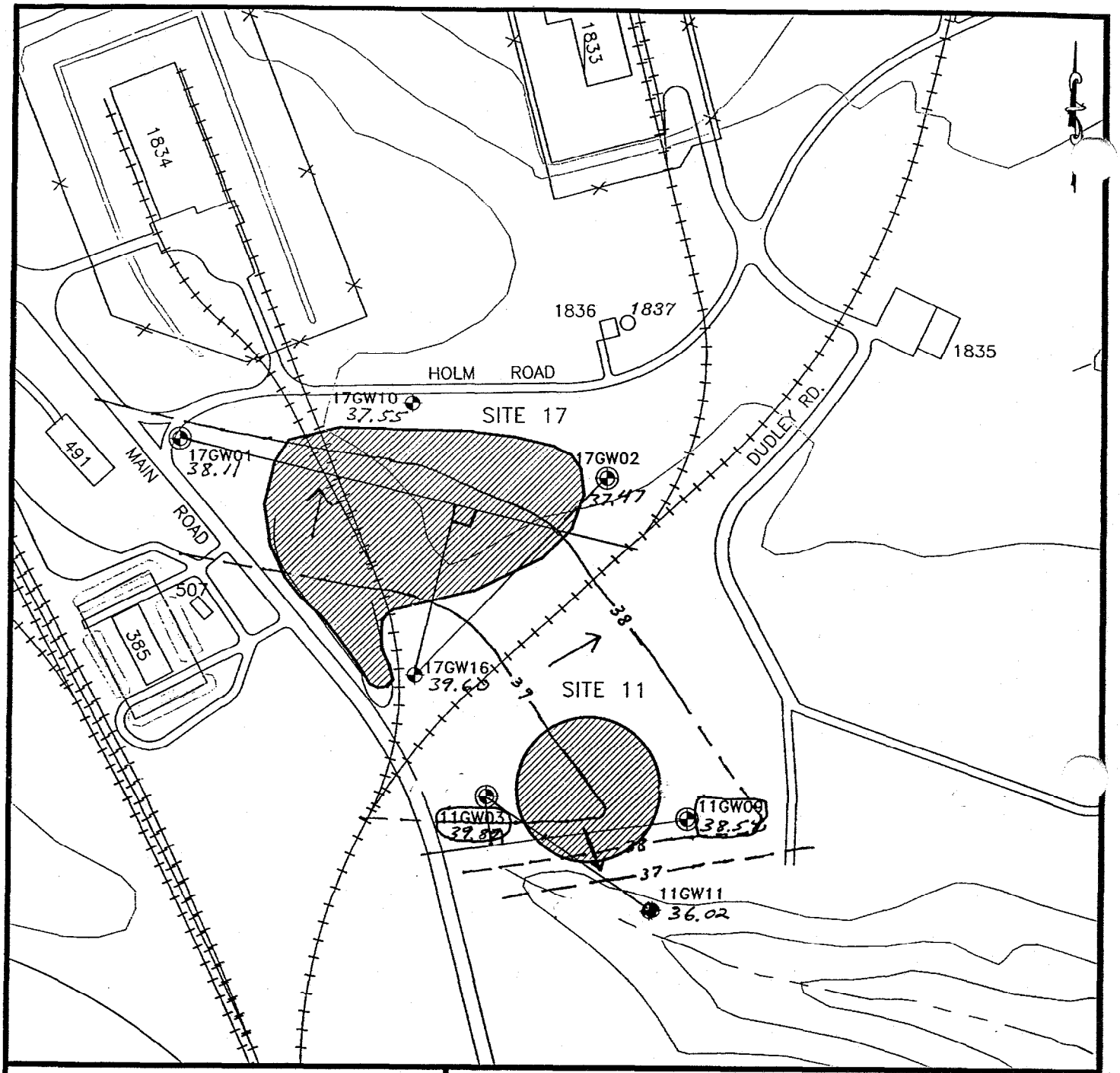
B) $\frac{39.87 - 36.02}{270 \text{ FT}} = 0.014$ SLOPE

C) $\frac{39.87 - 38.54}{0.014} = 93.27$ FT.

D) $\frac{39.87 - 38.54}{70 \text{ FT}} = 0.019 = \text{H.G.}$

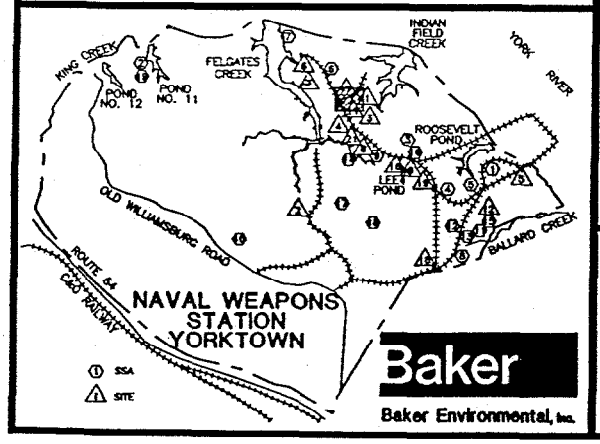
AVERAGE FOR ENTIRE INVESTIGATIVE AREA

SITE 17	0.006
SITE 1	0.019
	0.025 / 2 = 0.0125 = H.G.



200 0 100 200

1 inch = 200 ft.



Baker

Baker Environmental, Inc.

DRAINAGE
EDGE OF PAVEMENT
RAILROAD
FENCE
BUILDING
REMEDIAL INVESTIGATION SITE

11GW09 SHALLOW MONITORING WELL LOCATION (DAMES AND MOORE, 1986)

17GW10 SHALLOW MONITORING WELL LOCATION (WESTON, 1993)

354513WP

APPENDIX D
ROUND TWO CHAIN-OF-CUSTODY FORMS

Appendix D

Only Chain-of-Custody Forms associated with Sites 11 and 17
are included in this appendix.

Chain of Custody Record

(3)

Quanterra Environmental Services

OUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Baker	D. Martin	10/31/96	21046

Address: | Telephone Number (Area Code)/Fax Number: | Lab Number: | Page ____ of ____

City: | State: | Zip Code: | Site Contact:

Project Name: | Carrier/Waybill Number:

Contract/Purchase Order/Quote No.: CTO-354

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	VOC	SVOC	Pest/PCB	TAL Metals (HNO3)	CN-NaOH	TKN-H2SO4	Ammonia N/H2SO4	TAL Metals	8330	CEC	TOC
4/11/22 RB03	10/31/96	1630	Water			8	—			X	X	X	X	X	X		X		
11SS06D	"	1520	Soil			4				X	X		X			X	X		
11SS06		1520	Soil			4				X	X		X			X	X		
11SS06MS/MSD		1520	Soil			4				X	X		X			X	X		
11SS03		1500	Soil			4				X	X		X			X	X		
11SS02		1450	Soil							X	X		X			X	X	X	X
11SS07		1530	Soil							X	X		X			X	X		

Special Instructions:

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [ ] Disposal By Lab [ ] Archive For ____ Months

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

1. Relinquished By	Date	Time	1. Received By	Date	Time
David J. Martin	10/31/96	1200	Kris Brooks	11-1-96	1030
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments: ~~1.9°C~~ OAW 4.5°C cooler temp

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

900000

Chain of Custody Record

SDG 11-06

(4)

Quanterra Environmental Services

QUA 4124

Client	Project Manager	Date	Chain Of Custody Number
Baker			21047
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page ____ of ____**

City	State	Zip Code	Site Contact

Project Name	Carrier/Waybill Number

Contract/Purchase Order/Quote No.
62470-349-

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Bulk Density	VOC (HCL)	VOC	SVOC	Pest/PCB	8330	TAL Metal (HNO3)	TAL	CN	CN (NaOH)	TKN	Nitrate/Nitrite	Ammonia	TOC	C.E.S.
22 SB 04-08	10/31	1311	Soil			5					X	X	X	X	X		X		X		X	X	
22SB04-04		1239	Soil			5					X	X	X	X	X		X		X		X	X	
22 SS22		0910				5		NO VOC			X	X	X	X	X		X		X		X		X
22SS22D		0910				4		↓			X	X	X	X	X		X		X		X		
22SS22 MS/MSD		0910				4					X	X	X	X	X		X		X		X		
4SS45	10/30	0825				5		↓	X		X	X	X	X	X		X		X		X	X	X
4SS44	10/30	0800				4																	
22SS21	10/31	0900				4		NO VOC			X	X	X	X	X		X		X		X	X	
22SS23	10/31	0915				4						X	X	X	X		X		X		X	X	
4SB07-09	10/29	1136				5					X	X	X	X	X		X		X		X	X	
4SB08-13	10/30	1013				5					X	X	X	X	X		X		X		X	X	
4SB07-15	10/29	1236				5					X	X	X	X	X		X		X		X	X	
4SB08-06	10/30	0940				5					X	X	X	X	X		X		X		X	X	
22TB02	10/31					1					X												
4/11/22RBA3	10/31	1630				3					X												

Special Instructions

Possible Hazard Identification	Sample Disposal
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown	☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Turn Around Time Required	QC Level	Project Specific (Specify)
☒ Normal ☐ Rush	☐ I. ☐ II. ☐ III.	

	Date	Time		Date	Time
1. Relinquished By: David J. Martin	10/31/96	1900	1. Received By: R. Heine	11.1.96	9:45
2. Relinquished By: R. Heine	11.1.96	16:45	2. Received By: Kim Brooks	11.2.96	1030
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WH... - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

3.2: Quanterra ... 15 21.50 Intact & preservation

Chain of Custody Record

(5)

Quanterra Environmental Services

OUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Baker Environmental Inc	Heather DeBolt	11-1-96	21048
Address	Telephone Number (Area Code)/Fax Number: 412-269-6000	Lab Number	Page ____ of 1
City / State / Zip Code	Site Contact: Dave Martin		
Project Name	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.: CTO-354			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	VOC	SVOC	Pest/PCB	TAL Metals, CN	8330-Explosive	Nitrate-Nitrite	Ammonia-Bulk density	TKN-CEC	pH	Sieve/hydrometer grain size	TOC	CEC
11SD04-01	11-1-96	1140	Sed.						X	X	X	X	X	X	X	X	X	X		
11SD04-02	↓	1145	↓						X	X	X	X	X	X	X	X	X	X		
11SD03-01		1115							X	X	X	X	X	X	X	X	X	X		
11SD03-02		1135							X	X	X	X	X	X	X	X	X	X		
11SD03D-01		1115						Duplicate	X	X	X	X	X	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	← NO	
11SD03+01	↓	1115	↓					MS/MSD	X	X	X	X	X							
11SS01	11-1-96	0455	soil							X	X	X	X				X			
11SS04	↓	0950								X	X	X	X				X			
11SS11D		0910								X	X	X	X				X			
11SS11		0910								X	X	X	X				X			
11SS10		0855								X	X	X	X				X			
11SS05		0825								X	X	X	X				X			
11SS09		0840								X	X	X	X	~~X~~	~~X~~	~~X~~	X	X		X
11SS08	↓	0930								X	X	X	X				X			
4SB06-13 (24-25')	10/31/96	0855							X	X	X	X	X	X	X	X			X	
4SB06-09	↓	0826							X	X	X	X	X	X	X	X			X	

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: As per delivery order [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: David J Martin	11-1-96	1900	1. Received By: Kris Brooks	11-2-96	1030
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

000012

Chain of Custody Record

6

Quanterra Environmental Services

QUA 4124

Client: Baker Env.	Project Manager:	Date: 11-1-96	Chain Of Custody Number: 21049
Address:	Telephone Number (Area Code)/Fax Number:	Lab Number:	Page ____ of ____
City:	State:	Zip Code:	
Site Contact: D. Martin			
Project Name: Sites 4, 11, 17, 21 & 22	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.: GTO-			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: VOC (HCL)	Analysis: VOC
11/22RB04	11-1-96	1430							X	
11/22TB03										
22SB01-04	10/31/96	1630								X
22SB01-08	10/31/96	1707								X

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: As per delivery order [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

1. Relinquished By: David J Martin	Date: 11-1-96	Time: 1900	1. Received By: Luis Brodus	Date: 11296	Time: 1030
2. Relinquished By:	Date:	Time:	2. Received By:	Date:	Time:
3. Relinquished By:	Date:	Time:	3. Received By:	Date:	Time:

Comments:

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

7

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
Baker Env.			21050
Address	Telephone Number (Area Code)/Fax Number	Lab Number	Page ___ of ___
City / State / Zip Code	Site Contact: D. Martin		
Project Name	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt: pH	CEC, TOC	Bulk density	Analysis: VOC (HCL)	SVOC	Pest/PCB	TAL Metal (HNO3)	Ammonia-H2SO4	TKN H2SO4	Nitrate-Nitrite H2SO4	SVOC	Pest/PCB	VOC	TAL Metals	Grain size Sieve hydrometer
11/22 RB04	11-1-96	7430	water								X	X	X	X	X	X	X					
4SB06-16	10-31-96		soil					X	X	X												X
22SB04-09	10-31-96	1319						X	X	X												X
22SB01-04	10-31-96	1636													X	X	X	X	X	X	X	
22SB01-08	10-31-96	1707													X	X	X	X	X	X	X	
4SS50	11-1-96	1335						X	X	X												
22SB01A-21	10-1-96	1243						X	X	X												X

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [ ] Disposal By Lab [ ] Archive For ___ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: As per order [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: David J. Martin	11-1-96	1900	1. Received By: Kris Brooks	11296	1030
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

000014

SDG #07

(8)

Chain of Custody Record

Quanterra Environmental Services

OUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-4-96	21172
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
AOP BLDG. 3 420 ROGER RD.	412-269-2061 269-2002		
City / State / Zip Code	**Site Contact**		
CORAOPOLIS / PA / 15108			
Project Name	**Carrier/Waybill Number**		
YORKTOWN WEAPONS STATION			
Contract/Purchase Order/Quote No.			
62470-349/354			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	SVOC	PEST/PCB	EXP 8330	TAL METALS	CN	CEC	TOC	[redacted]	[redacted]			
17SS11	11-3-96	0905	Soil	16 oz	4 oz	4	NONE		X	X	X	X	X							
17SS06A	11-3-96	0755	Soil	16 oz	4 oz	4	NONE		X	X	X	X	X							
17SS09	11-3-96	0850	Soil	16 oz	4 oz	4	NONE		X	X	X	X	X							
17SS03A	11-3-96	1455	Soil	16 oz	4 oz	4	NONE		X	X	X	X	X							
17SS08	11-3-96	0840	Soil	16 oz	4 oz	4	NONE		X	X	X	X	X							
17SS03B	11-3-96	1505	Soil	16 oz	4 oz	4	NONE		X	X	X	X	X							
17SS10	11-3-96	0915	Soil	16 oz	4 oz	4	NONE		X	X	X	X	X							
17SS08D	11-3-96	0840	Soil	16 oz	4 oz	4	NONE		X	X	X	X	X							
17SS08 MS/MSD	11-3-96	0840	Soil	16 oz	4 oz	4	NONE		X	X	X	X	X							
17SS06B	11-3-96	0805	Soil	16 oz	4 oz	4	NONE		X	X	X	X	X							
17SS13	11-4-96	1005	Soil	16 oz	4 oz	4	NONE		X	X	X	X	X							
17SS14	11-4-96	1040	Soil	16 oz	4 oz	4	NONE		X	X	X	X	X							
17SS15	11-4-96	1050	Soil	16 oz	4 oz	4	NONE		X	X	X	X	X							
17SS12	11-4-96	0920	Soil	16 oz	4 oz	4	NONE		X	X	X	X	X	X	X	[redacted]	[redacted]			
17SS12D	11-4-96	0920	Soil	16 oz	4 oz	4	NONE		X	X	X	X	X							
17TP07B-08	11-2-96	1525	Soil	16 oz	4 oz	4	NONE		X	X	X	X	X							

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For _____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: Kenneth A Fua	11-4-96	1900	1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By: [signature]	11-5-96	140p

Comments: Cooler temp 0.8°C

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

100004

[redacted]

Chain of Custody Record

(9)

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-4-96	21037
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	Page 1 of 2
AOP BLDG 3 420 ROUSER RD.	412-269-2061 269-2002		
City / State / Zip Code	**Site Contact**		
CORAOPOLIS / PA / 15108			
Project Name	**Carrier/Waybill Number**		
YORKTOWN WEAPONS STATION			
Contract/Purchase Order/Quote No.			
62470-354/349			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	CN - NaOH	TAL METALS - HNO_3	TKN - H_2SO_4	NITRATE NITRITE AMMONIA H_2SO_4	SVOC -	PEST/PCB	EXP 8270	VOC - HCL	TOC - HCL			
17/22 RB06	11-4-96	1240	WATER	7+ Liters	P, G	13			X	X	X	X	X	X	X	X	X			
17/22 RB05	11-3-96	1630	WATER	200 mL	40 mL	5	HCL									X	X			
17/22 RB04	11-2-96	1615	WATER	200 mL	40 mL	5	HCL									X	X			
17TP07A-08	11-2-96	1515	Soil	2 oz	2 oz	1	NONE									X				
17TP01A-07	11-2-96	1645	Soil	2 oz	2 oz	1	NONE									X				
17TP01B-07	11-2-96	1650	Soil	2 oz	2 oz	1	NONE									X				
17TP05A-03	11-2-96	1325	Soil	2 oz	2 oz	1	NONE									X				
17TP05B-03	11-2-96	1330	Soil	2 oz	2 oz	1	NONE									X				
[redacted] 22SB05-08	11-2-96	1109	Soil	2 oz	2 oz	1	NONE									X				
22SB05-04	11-2-96	1050	Soil	2 oz	2 oz	1	NONE									X				
22SB02-04	11-3-96	0915	Soil	2 oz	2 oz	1	NONE									X				
22SB03-04	11-2-96	1610	Soil	2 oz	2 oz	1	NONE									X				
22SB03-04D	11-2-96	1610	Soil	2 oz	2 oz	1	NONE									X				
22SB02-08	11-3-96	0925	Soil	2 oz	2 oz	1	NONE									X				
22SB01A-08	11-2-96	0940	Soil	2 oz	2 oz	1	NONE									X				
22SB03-03 MS/MSD	11-2-96	1608	Soil	2 oz	2 oz	1	NONE									X				

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For _____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1. Relinquished By: Kenneth A. Fua	11-4-96	1900	1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By: [signature]	11-5-96	140 p

Comments

Cooler temps 0.2°C

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

(9)

Quanterra Environmental Services

OUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-4-96	21171
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	Page 2 of 2
AOP BLDG. 3 420 ROUSER RD	412-269-2061 269-2002		

City	State	Zip Code	Site Contact
CORAOPOLIS	PA	15108	

Project Name	Carrier/Waybill Number
YORKTOWN WEAPONS STATION	

Contract/Purchase Order/Quote No.: G2470-374/354

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	VOC	SVOC	TAL METALS, CN	TOC	TKN	CEC	Ammonia	EXP 8330	PEST/PCB			
22SB03-08	11-2-96	1631	Soil	2oz	2oz	1	NONE		X											
22SB01A-04	11-2-96	0920	Soil	2oz	2oz	1	NONE		X											
17TP07B-08	11-2-96	1525	Soil	2oz	2oz	1	NONE		X											
17TP03B-01D	11-3-96	1500	Soil	2oz	2oz	1	NONE		X	X	X	X	X	X	X	X	X			
17TP06A-03	11-3-96	1215	Soil	2oz	2oz	1	NONE		X	X	X				X	X	X			
17TP06B-03	11-3-96	1220	Soil	2oz	2oz	1	NONE		X	X	X					X	X			
17TP02A-07	11-3-96	0940	Soil	2oz	2oz	1	NONE		X	X	X	X	X	X	X	X	X			
17TP03B-01 MS/MSD	11-3-96	1500	Soil	4oz	4oz	1	NONE		X	X	X	X	X	X	X	X	X			
17TP03B-01	11-3-96	1500	Soil	2oz	2oz	1	NONE		X	X	X	X	X	X	X	X	X			
17/22TB04			WATER	40mL	40mL	1	HCL		X											

Special Instructions

Possible Hazard Identification	Sample Disposal
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown	☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months
Turn Around Time Required	**QC Level**
☒ Normal ☐ Rush	☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: Kenneth A. Fun	11-4-96		1. Received By		
2. Relinquished By:			2. Received By		
3. Relinquished By			3. Received By: [signature]	11-5-96	1:40 p

Comments: Cooler temp 0.2°C

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

[redacted]

SDG #08

Chain of Custody Record

(10)

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-4-96	21173
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	
AOP BLDG. 3 420 ROUSER RD.	412-269-2061 269-2002		Page 1 of 2
City / State / Zip Code	**Site Contact**		
CORAOPOLIS PA 15108			
Project Name	**Carrier/Waybill Number**		
YORKTOWN WEARNS STATION			
Contract/Purchase Order/Quote No.			
62470-349/354			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	SVOC	TAL METALS	CN	PEST/PCB	EXP 8330	CEC	TOC	Ammonia	TKN	nitrate nitrite		
[redacted] 17SS01B	11-2-96	0955	Soil	16 oz	4oz	4	NONE		X	X	X	X	X							
17SS02A	11-2-96	1015	Soil	16oz	4oz	4	NONE		X	X	X	X	X							
17SS01A	11-2-96	0945	Soil	16oz	4oz	4	NONE		X	X	X	X	X	X	X	[redacted]				
22SB03-08	11-2-96	1631	Soil	16oz	4oz	4	NONE		X	X	X	X	X		X	X	X	X		
22SB01A-08	11-2-96	0940	Soil	16oz	4oz	4	NONE		X	X	X	X	X		X	X	X	X		
17TP05A-03	11-2-96	1325	Soil	16oz	4oz	4	NONE		X	X		X	X							
17SS07B	11-2-96	1435	Soil	16oz	4oz	4	NONE		X	X	X	X	X							
17SB02-08	11-3-96	0925	Soil	16oz	4oz	4	NONE		X	X	X	X	X		X	X	X	X		
22SB03-03 MS/MSD	11-2-96	1608	Soil	16oz	4oz	4	NONE		X	X	X	X	X		X	X	X	X		
22SB03-04	11-2-96	1610	Soil	16oz	4oz	4	NONE		X	X	X	X	X		X	X	X	X		
22SB05-08	11-2-96	1109	Soil	16oz	4oz	4	NONE		X	X	X	X	X		X	X	X	X		
17TP05B-03	11-2-96	1330	Soil	16oz	4oz	4	NONE		X	X	X	X	X							
17TP01B-07	11-2-96	1650	Soil	16oz	4oz	4	NONE		X	X		X	X							
22SB03-04D	11-2-96	1610	Soil	16oz	4oz	4	NONE		X	X	X	X	X		X	X	X	X		
17TP07A-08	11-2-96	1515	Soil	16oz	4oz	4	NONE		X	X	X	X	X							
22SB02-04	11-3-96	0915	Soil	16oz	4oz	4	NONE		X	X	X	X	X		X	X	X	X		

Special Instructions

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☒ Normal ☐ Rush

QC Level
☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
Kenneth A. Fur	11-6-96	1900			
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**
			[signature]	11-5-96	140p

Comments

Cooler temp 0.8°C and 0.2°C

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

(10)

Quanterra Environmental Services

OUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEPOIT	11-4-96	21178
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
AOP BLDG. 3 420 ROUSER RD	412-269-2061 ✱269-2001		
City / State / Zip Code	**Site Contact**		
CORAOPOLIS / PA / 15108			
Project Name	**Carrier/Waybill Number**		
YORKTOWN WEAPONS STATION			
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	SVOC	TAL METALS	TOC	EXP 8330	PEST/PCB	CN	TKN	AMMONIA	NITRATE NITRITE			
22SB05-04	11-2-96	1050	Soil	16 oz	4 oz	4	NONE		X	X	X	X	X	X	X	X	X			
22SB01A-04	11-2-96	0920	Soil	16 oz	4 oz	4	NONE		X	X	X	X	X	X	X	X	X			
17TP01A-07	11-2-96	1645	Soil	16 oz	4 oz	4	NONE		X	X		X	X	X						
17SS02B	11-2-96	1025	Soil	16 oz	4 oz	4	NONE		X	X		X	X	X						
17SS07A	11-2-96	1430	Soil	16 oz	4 oz	4	NONE		X	X		X	X	X						
17SS05A	11-2-96	1225	Soil	16 oz	4 oz	4	NONE		X	X		X	X	X						
17SS05B	11-2-96	1240	Soil	16 oz	4 oz	4	NONE		X	X		X	X	X						

Analysis

Special Instructions

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☒ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
Kenneth A Fox					
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**
			[illegible]	11.5.96	140p

Comments

Cooler temp 0.8°C and 0.2°C

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

[redacted]

Chain of Custody Record

(11)

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	DAVE MARTIN	11-4-96	21036
Address: AOF BLDG. 3 420 ROUSER ROAD	Telephone Number (Area Code)/Fax Number: 412-269-2021 269-2002	Lab Number	Page 1 of 1
City: CORAOPOLIS State: PA Zip Code: 15108	Site Contact		
Project Name: YORKTOWN WEAPONS STATION	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.: 62470-349-			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	CN - NaOH	TAL METALS - HNO_3	TKN - H_2SO_4	NITRATE/NITRITE - H_2SO_4	SVOC	PEST / PCB	EXP 8330
17122 RBC4	11-2-96	1615	WATER	7+ LITERS	P, GL	8			X	X	X	X	X	X	X
17102 RBC5	11-3-96	1630	WATER	7+ LITERS	P, GL	8			X	X	X	X	X	X	X

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For _____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: Kenneth A. Fox	11-4-96	1900	1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By: [signature]	11-5-96	140p

Comments: Cooler temp 0.5°C

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

00016

SDG #10

(13)

Chain of Custody Record

Quanterra Environmental Services

GHA-4124

Client	BAKER ENVIRONMENTAL
Address	AOP MDS 3 420 ROWER RD
City	CORAOPOLIS
State	PA
Zip Code	15108
Project Name	YORKTOWN WEAPONS STATION
Contract/Purchase Order/Quote No.	62470 - ~~[illegible]~~ 349 PWD AWO XMB 11/4/96
Project Manager	HEATHER DEBOIT
Telephone Number (Area Code)/Fax Number	412-269-2061 / 412-269-2002
Site Contact	KEN TUA
Carrier/Waybill Number	FED-EX 2631390440
Date	11-13-96
Lab Number	
Chain Of Custody Number	21175
Page	1 of 1

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	SVOC	PEST/PCB	EXP 8330	Tot metals - Hexa	As metals - Hexa	Cd - Nacl	TSS/TDS	Cyanide - Chloride	Sulfate Phosphate	Nitrate/Nitrite - Hexa	Tot METALS	pH
FCA16-11196	11-13-96	1330	WATER			11			X	X	X	X	X	X	X	X	X	X		
17SS16	11-11-96	1545	Soil			4			X	X	X			X					X	X
17SS16A	11-11-96	1545	Soil			4			X	X	X			X					X	
17SS16 MS/MSD	11-11-96	1545	Soil			4			X	X	X			X					X	
45B05A-33	11 11 96	1490						Contaminated / Bulk Debris / Tool / CE												
21SB01A-19	11/12/96	1600																		

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time
1. Relinquished By: Heather A. Deboit	11-13-96	1400
2. Relinquished By:		
3. Relinquished By:		

	Date	Time
1. Received By: Chris Paredes	11/14/96	1230
2. Received By:		
3. Received By:		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

(14)

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-13-96	21179

Address	Telephone Number (Area Code)/Fax Number	Lab Number	Page 1 of
AOP BLDG. 3 420 ROUSER RD.	412-269-2061 / 412-269-2002		

City	State	Zip Code	Site Contact
CORAOPOLIS	PA	15108	KEN TUA

Project Name	Carrier/Waybill Number
YORKTOWN WEAPONS STATION	FED-EX 2631390440

Contract/Purchase Order/Quote No.: 62470-349

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	VOA - HCL	SVOC	PEST/PCB	8330	TOT. METALS - HNO_3	DIS METALS - HNO_3	CN - NAOH	TSS/TDS	BROMIDE CHLORIDE	SULFATE PHOSPHATE	NITRATE/NITRITE - H_2SO_4	METHANE - HCL
FBDI-11/96	11-12-96	1045	WATER			15			X	X	X	X	X	X	X	X	X	X	X	X
FBLG-11/96	11-12-96	1130	WATER			15			X	X	X	X	X	X	X	X	X	X	X	X
FBRIG-11/96	11-12-96	1330	WATER			4	HCL		X											X
4TB06	11-12-96	1615	WATER			2	HCL		X											

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For _____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: Kenneth A. Tua	11-13-96	1900	1. Received By: Kris Brooks	111496	1230
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

600009

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

(19)

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-14-96	21051
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
AOF BLDG. 3 420 ROUSER RD.	412-269-2061 / 412-269-2002		
City / State / Zip Code	**Site Contact**		
CORAOPOLIS / PA / 15108	KEN TUA		
Project Name	**Carrier/Waybill Number**		
YORKTOWN WEAPONS STATION	FED-EX 262 823 7651		
Contract/Purchase Order/Quote No.			
62470-354			

Analysis

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	VOC	SVOC	PEST/PCB	TOT METALS	SSSO	PH	CEC	TOC	GRAIN SIZE	BULK DENSITY	NITRATE NITRITE
11SB12-02	11-14-96	1227	SOIL			4			X	X	X	X	X	X					
11SB12-02D	11-14-96	1227	SOIL			4			X	X	X	X	X	X					
11SB12-02 MS/MSD	11-14-96	1227	SOIL			4			X	X	X	X	X	X					
11SB13-02	11-14-96	1302	SOIL			5			X	X	X	X	X	X					
11SB14-02	11-14-96	1320	SOIL			5			X	X	X	X	X	X					
11SB15-02	11-14-96	1343	SOIL			5			X	X	X	X	X	X					
11SB15-03	11-14-96	1345	SOIL			1								X	X	X	X	X	X
11SB15-02	11-14-96	1443	SOIL			1								X	X	X	X	X	X
11SB16-02	11-13-96	1612	SOIL			5			X	X	X	X	X	X					
11SB17-02	11-14-96	1207	SOIL			5			X	X	X	X	X	X					
11SB18-02	11-14-96	1158	SOIL			5			X	X	X	X	X	X					
4SB01A-17	11-13-96	1358	SOIL			1								X	X	X	X	X	
4SB01A-23	11-13-96	1425	SOIL			1								X	X	X	X	X	
01SB01A-26	11-12-96	1700	SOIL			1								X	X	X	X	X	
21GW03-002	11-14-96	1430	WATER			2			X										
11GW03-002	11-14-96	1200	WATER			2			X										

Special Instructions

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☒ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

1. Relinquished By	Date	Time	1. Received By	Date	Time
Kenneth A. Tua	11-14-96	1900	Lisa Brooks	11/15/96	200
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

600009

Chain of Custody Record

(19A)

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-14-96	21177
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	
AOP BLDG 3 420 ROUSER RD	412-269-2061 / 412-269-2002		Page 2 of 2

City	State	Zip Code	Site Contact
CORAOPOLIS	PA	15108	KEN TUA

Project Name	Carrier/Waybill Number
YORKTOWN WEAPONS STATION	FED-EX 2628237651

Contract/Purchase Order/Quote No.: 62470-349

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: VOA
22GW02-001	11-14-96	1630	WATER			2			X
22GW03-001	11-14-96	0930	WATER			2			X
22RB05	11-13-96	1645	WATER			2			X
22/11/21 RB09	11-14-96	1545	WATER			2			X
22/21/11 TB08	11-14-96		WATER			2			X

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: Kenneth A. Tua	11-14-96	1900	1. Received By: Lus Brooks	11/15/96	200
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

0000018

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

(20)

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-14-96	20045
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	Page 1 of 1
AOP BLDG 3 420 ROUSER RD	412-269-2061 / 412-269-2002		

City	State	Zip Code	Site Contact
CORAOPOLIS	PA	15108	KEN TUA

Project Name	Carrier/Waybill Number
YORKTOWN WEAPONS STATION	FED-EX 2628237651

Contract/Purchase Order/Quote No.: 62470-354

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	SVOC	PEST/PCB	8330	CN - NAOH	TOTAL METALS - HNO3	NITRATE NITRITE - H2SO4	TSS/TDS	DIS METALS - HNO3				
11GW03-002	11-14-96	1200	WATER			10			X	X	X	X	X	X	X	X				
21GW03-002	11-14-96	1430	WATER			8			X	X		X	X	X	X	X				

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For _____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: Kenneth A. Tua	11-14-96	1900	1. Received By: Kris Brooks	11/15/96	200
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

600000

Chain of Custody Record

(22)

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-14-96	20044
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
AOP BIDG 3 420 ROUSER RD	412-269-2061 / 412-269-2002		

City	State	Zip Code	Site Contact
CORAOPOLIS	PA	15108	KEN TUA

Project Name	Carrier/Waybill Number
YORKTOWN WEAPONS STATION	FED-EX 2628237651

Contract/Purchase Order/Quote No.: 62470-349

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	SVOC	PEST/PCB	8330	Tot METALS - HNO3	Dis METALS - HNO3	CN - NaOH							
22RB03	11-13-96	1645	WATER			8			X	X	X	X	X	X							
22/11/21 RB09	11-14-96	1545	WATER			8			X	X	X	X	X	X							

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For _____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1. Relinquished By: Kenneth A. Tua	11-14-96	1900	1. Received By: [signature]	11/15/96	200
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

(23)

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-15-96	21002
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
AOP BLDG 3 420 ROUSER RD	412-269-2061 / 412-269-2002		

City	State	Zip Code	Site Contact
CORAOPOLIS	PA	15108	KEN TUA

Project Name	Carrier/Waybill Number
YORKTOWN WEAPONS STATION	FED-EX 2628237662

Contract/Purchase Order/Quote No.: 62470-354

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	SVOC	PEST/PCB	8350	TOT METALS - HNO_3	DIS METALS - HNO_3	NITRATE NITRITE - H_2SO_4	CN - NAOH					
11EW11-002 MS/MSD	11-15-96	1000	WATER			15			X	X	X	X	X	X	X					
11EW11D-002	11-15-96	1000	WATER			6					X	X	X	X	X					

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1. Relinquished By: Kenneth A. Tua	11-15-96	1900	1. Received By: [signature]	111696	1030
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

000012

Chain of Custody Record

(24)

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-15-96	21001

Address	Telephone Number (Area Code)/Fax Number	Lab Number	
AOP BLDG 3 420 ROUSER RD	412-269-2061 / 412-269-2002		Page 1 of 1

City	State	Zip Code	Site Contact
Coraopolis	PA	15108	KEN TUA

Project Name	Carrier/Waybill Number
YORKTOWN WEAPONS STATION	FED-EX 2628237662

Contract/Purchase Order/Quote No.: 62470-354

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	SVOC	PEST/PCB	8330	TOT METALS - HNO_3	DIS METALS - HNO_3	NITRATE NITRITE - H_2SO_4	CN - NAOH	TSS/TDS	BROMIDE CHLORIDE	SULFATE PHOSPHATE		
11GW11A-002	11-15-96	1000	WATER			3			X	X										
17GW10-002	11-15-96	1510	WATER			10			X	X	X	X	X	X	X	X				
17GW02-003	11-15-96	1455	WATER			6						X	X	X	X	X	X	X		

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For _____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: Kenneth A. Tua	11-15-96	1900	1. Received By: Lisa Brooks	111696	1030
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

000007

Chain of Custody Record

25

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-15-96	21033

Address	Telephone Number (Area Code)/Fax Number	Lab Number	Page 1 of 1
AOP BLDG. 3 420 ROUSER RD	412-269-2061 / 412-269-2002		

City	State	Zip Code	Site Contact
Coraopolis	PA	15108	KEN TUA

Project Name	Carrier/Waybill Number
YORKTOWN WEAPONS STATION	FED-EX 2628237662

Contract/Purchase Order/Quote No.: 62470-354

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	SVOC	8330	CN - NAOH	TOT METALS - HNO3	DIS METALS - HNO3	TSS / TDS	NITRITE NITRATE	BROMIDE CHLORIDE	SULFATE PHOSPHATE	PEST / PCB		
11GW11-002	11-15-96	1000	WATER			11			X	X	X	X	X	X	X	X	X	X		
17GW01-003	11-15-96	1300	WATER			8			X		X	X	X	X	X			X		

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For _____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: Kenneth A. Tua	11-15-96	1900	1. Received By: Kim Brooks	111696	1030
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

00000

Chain of Custody Record

26

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-15-96	21035
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	Page 1 of 1
AOP BIDG 3 420 ROUSER RD	412-269-2061 / 412-269-2002		
City / State / Zip Code	**Site Contact**		
CORAOPOLIS / PA / 15108	KEN TUA		
Project Name	**Carrier/Waybill Number**		
YORKTOWN WEAPONS STATION	FED-EX 2628237662		
Contract/Purchase Order/Quote No.			
62470-354			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	8330	SVOC	PEST/PCB	TOT METALS - HNO3	DIS METALS - HNO3	CN - NaOH	NITRATE NITRITE - H2SO4
17GW01-003	11-15-96	1300	WATER			2			X						
RB10-11117	11-15-96	1030	WATER			9			X	X	X	X	X	X	X
17GW02-003	11-15-96	1455	WATER			5			X	X	X				

Analysis

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For _____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1. Relinquished By: Kenneth A. Tua	11-15-96	1900	1. Received By: [signature]	111696	1630
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

00012

Chain of Custody Record

(27)

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-15-96	21034
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	Page 1 of 1
AOP BLDG 3 420 ROUSER RD	412-269-2061 / 412-269-2002		

City	State	Zip Code	Site Contact
CORAOPOLIS	PA	15108	KEN TUA

Project Name	Carrier/Waybill Number
YORKTOWN WEARINS STATION	FED-EX 2628237662

Contract/Purchase Order/Quote No.: 62470-354

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	VOA w/HCL	Methane w/HCL	8330	SVOA	Pest/PCB w/HCL	Total Metals	Dissolved Metals	Nitrate/Nitrite w/H2SO4				
170W02-003	11-15-96	1455				4			X	X										
176W16-002	11-15-96	1310				4			X	X										
17GW16D-002	11-15-96	1310				4			X		X									
17GW16-002 (MS/MSD)	11-15-96	1310				16			X		X	X	X	X	X	X				
17GW10-002	11-15-96	1510				2			X											
17GW01-003	11-15-96	1300				2			X											
11GW11-002	11-15-96	1000				4			X	X										
11GW11D-002	11-15-96	1000				2			X											
11GW11-002 (MS/MSD)	11-15-96	1000				4			X											
11/17RB10	11-15-96	1630				2			X											
11/17TB09	11-15-96					2			X											

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: Kenneth A. Tua	11-15-96	1900	1. Received By: [signature]	11/16/96	1030
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

000009

Chain of Custody Record

28

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-15-96	21005
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	
AOP BLDG 3 420 ROUSER RD	412-269-2001 / 412-269-2002		Page 1 of 1

City	State	Zip Code	Site Contact
CORAOPOLIS	PA	15108	KEN TUA

Project Name	Carrier/Waybill Number
YORKTOWN WEAPONS STATION	FED-EX 2628237662

Contract/Purchase Order/Quote No.: 62470-354

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	SVOC	PESTICIDES	8330	CN - NA OH	TOT METALS - HNO3	DIS METALS - HNO3	TSS / TDS	BICARBONATE	SULFATE	ORTHO PHOSPHATE	NITRATE - NITRITE	NITRATE - H2SO4		
17C-W1C-002	11-15-96	1310	WATER			11			X	X	X	X	X	X	X	X	X	X	X			
17C-W1CD-002	11-15-96	1310	WATER			7			X	X		X	X	X					X			
17C-W1C-002 MS/MSD	11-15-96	1310	WATER			2						X										

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For _____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: Kenneth A. Tua	11-15-96	1900	1. Received By: [signature]	11/16/96	1030
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

000004

Chain of Custody Record

(29)

Quanterra Environmental Services

OUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-18-96	21004
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	Page 1 of 2
AOP BLDG 3 420 ROUSER RD	412-269-2061 / 412-269-2002		
City / State / Zip Code	**Site Contact**		
Coraopolis / PA / 15108	KEN TUA		
Project Name	**Carrier/Waybill Number**		
YORKTOWN WEAPONS STATION	2628237636 - FED-EX		
Contract/Purchase Order/Quote No.			
62470 - 349			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	VOA - HCL	METHANE - HCL	SVOC	PESTICIDES	8330 -	TOT METALS - HNO_3	DISS METALS - HNO_3	CN - NAOH	NITRATE NITRITE - H_2SO_4	TSS/TDS		
4GW06-001	11-16-96	1630	WATER			[redacted]	12		X	[redacted]	X	X	X	X	X	X	X	X		
4GW06D-001	11-16-96	1630	WATER			11			X		X	X	X	X	X	X	X			
4GW06-001 MS/MSD	11-16-96	1630	WATER			4			X											
21GW02-001	11-16-96	0915	WATER			2			X											
21GW02D-001	11-16-96	0915	WATER			2			X											
21GW02-001 MS/MSD	11-16-96	0915	WATER			4			X											
4GW01A-001	11-16-96	1200	WATER			2			X											
4GW02-003	11-17-96	1015	WATER			4			X	X										
4GW04-003	11-16-96	1220	WATER			2			X											
4GW05-003	11-16-96	1240	WATER			4			X	X										
4GW05A-001	11-17-96	1615	WATER			4			X	X										
4GW06A-001	11-17-96	1300	WATER			2			X											
4GW02A-001	11-17-96	1100	WATER			4			X	X										
4GW03-003	11-16-96	1230	WATER			4			X	X										
11GW09-003	11-16-96	1450	WATER			2			X											
11GW11A-002	11-16-96	1545	WATER			4			X	X										

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For _____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify): 1

	Date	Time		Date	Time
1. Relinquished By: Kenneth A. Tua	11-18-96	1900	1. Received By: [signature]	11/19/96	1030
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

00012

[redacted]

Chain of Custody Record

(29A)

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-18-96	21188
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	Page 2 of 2
AOP BLDG. 3 420 ROUSER RD.	412-269-2061 / 412-269-2002		

City	State	Zip Code	Site Contact
CORAOPOLIS	PA	15108	KEN TUA

Project Name	Carrier/Waybill Number
YORKTOWN WEAPONS STATION	FED-EX 2628237636

Contract/Purchase Order/Quote No.: 62470-349

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: VOA - HCL	Analysis: [redacted]
216W01A-001	11-17-96	1200	WATER			2			X	
216W04-002	11-16-96	0930	WATER			2			X	
4/11/21 RB11	11-16-96	1700	WATER			2			X	
4/21 RB12	11-17-96	1300	WATER			2			X	
4/11/21 TB10	11-16-96		WATER			2			X	

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For _____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
Kenneth A. Tua	11-18-96	1900	[illegible]	11/19/96	1030
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

000014

Chain of Custody Record

(31)

Quanterra Environmental Services

OUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-18-96	21003
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	
AOP BLDG 3 420 ROUSER RD	412-269-2061 / 412-269-2002		Page 1 of 1

City	State	Zip Code	Site Contact
Coraopolis	PA	15108	KEN TUA

Project Name	Carrier/Waybill Number
YORKTOWN WEAPONS STATION	FED-EX 2628237636

Contract/Purchase Order/Quote No.: 62470-354

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	SVOC	PEST/PCB	8330	CN - NaOH	TSS/TDS	NITRATE NITRITE - H_2SO_4	TOT METALS - HNO_3	DIS METALS - HNO_3
116W09-003	11-16-96	1440	WATER			10			X	X	X	X	X	X	X	X

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

1. Relinquished By	Date	Time	1. Received By	Date	Time
Kenneth A. Tua	11-18-96	1900	[illegible]	111996	1030
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

DISTRIBUTION: WHITE - Shipping with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

00015

[redacted]

Chain of Custody Record

(32)

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-18-96	21180
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	
AOP BLDG. 3 420 ROUSER RD	412-269-2061 / 412-269-2002		Page 1 of 1
City / State / Zip Code	**Site Contact**		
Carnegie / PA / 15108	KEN TUA		
Project Name	**Carrier/Waybill Number**		
YORKTOWN WEAPONS STATION	FED-EX 2628237636		
Contract/Purchase Order/Quote No.			
62470-354			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	SVOC	PEST/PCB	8330	TOT METALS - HNO_3	DIS METALS - HNO_3	CN - NaOH	TSS/TDS	NITRATE NITRITE - H_2SO_4	BROMIDE CHLORIDE	SULFIDE SULFATE		
11GW11A-002	11-17-96	1545	WATER			11			X	X	X	X	X	X	X	X	X	X		

Analysis

Special Instructions

Possible Hazard Identification	Sample Disposal
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown	☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months
Turn Around Time Required	**QC Level** / **Project Specific (Specify)**
☒ Normal ☐ Rush	☐ I. ☐ II. ☐ III.

1. Relinquished By	Date	Time	1. Received By	Date	Time
Kenneth A. Tua	11-18-96	1900	[illegible]	11/19/96	1030
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

000016

Chain of Custody Record

37

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
BAKER ENVIRONMENTAL	HEATHER DEBOIT	11-18-96	21182
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	Page 1 of 1
AOP BLDG 3 420 ROUSER RD	412-269-2061 / 412-269-2002		
City / State / Zip Code	**Site Contact**		
CORAOPOLIS PA 15108	KEN TUA		
Project Name	**Carrier/Waybill Number**		
YORKTOWN WEAPONS STATION	FED-EX 2628237636		
Contract/Purchase Order/Quote No.			
62470-349			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	SVOC	PEST/PCB	8330	TOT METALS - HNO3	D.S METALS - HNO3	CN - NAOH	NITRATE - H2SO4 NITRITE	TSS/TDS	BROMIDE CHLORIDE	SULFATE PHOSPHATE		
4GW03-003	11-16-96	1230	WATER			11			X	X	X	X	X	X	X	X	X	X		
4111121 RB11	11-16-96	1700	WATER			8			X	X	X	X	X	X						

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: Kenneth A. Tua	11-18-96	1900	1. Received By: Anna Brooks	11/19/96	1030
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

0008

APPENDIX E
ROUND TWO SAMPLING SUMMARY

CTO 354 - SURFACE SOIL
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

		Analysis Requested															Analysis Received																			
										Eng. Par.																Eng. Par.										
DATE SAMPLED	SAMPLE ID	TCL VOC	TCL SVOC	TCL Pesticides/PCBs	Nitramine Compounds	TAL Inorganics	Cyanide	pH			Total Organic Carbon	TKN	Ammonia	Nitrate/Nitrite	Cation Exchange Capacity	Grain Size	Bulk Density	TCL VOC	TCL SVOC	TCL Pesticides/PCBs	Nitramine Compounds	TAL Inorganics	Cyanide	pH			Total Organic Carbon	TKN	Ammonia	Nitrate/Nitrite	Cation Exchange Capacity	Grain Size	Bulk Density	DATE RECEIVED FROM THE LABORATORY	TURNAROUND TIME	LABORATORY SDG NO.	DATE RECEIVED FROM THE VALIDATOR	TURNAROUND TIME	VALIDATOR RELEASE NO.	COMMENTS
11/1/96	11SS01		X	X	X	X	X	X											X	X	X	X	X	X											12/4/96	33	BNWS04	1/6/97	32	96-20	
10/31/96	11SS02		X	X	X	X	X	X			X				X				X	X	X	X	X	X			X				X				12/4/96	34	BNWS04	1/6/97	32	96-20	Added pH
10/31/96	11SS03		X	X	X	X	X	X											X	X	X	X	X	X											12/4/96	34	BNWS04	1/6/97	32	96-20	Added pH
11/1/96	11SS04		X	X	X	X	X	X											X	X	X	X	X	X											12/4/96	33	BNWS04	1/6/97	32	96-20	
11/1/96	11SS05		X	X	X	X	X	X											X	X	X	X	X	X											12/4/96	33	BNWS04	1/6/97	32	96-20	
10/31/96	11SS06		X	X	X	X	X	X											X	X	X	X	X	X											12/4/96	34	BNWS04	1/6/97	32	96-20	MS/MSD, Added pH
10/31/96	11SS07		X	X	X	X	X	X											X	X	X	X	X	X											12/4/96	34	BNWS04	1/6/97	32	96-20	Added pH
11/1/96	11SS08		X	X	X	X	X	X											X	X	X	X	X	X											12/4/96	33	BNWS04	1/6/97	32	96-20	
11/1/96	11SS09		X	X	X	X	X	X			X				X	x			X	X	X	X	X	X			X				X				12/4/96	33	BNWS04	1/6/97	32	96-20	Cancel Grain Size, added TOC
11/1/96	11SS10		X	X	X	X	X	X											X	X	X	X	X	X											12/4/96	33	BNWS04	1/6/97	32	96-20	
11/1/96	11SS11		X	X	X	X	X	X											X	X	X	X	X	X											12/4/96	33	BNWS04	1/6/97	32	96-20	
10/31/96	11SS06D		X	X	X	X	X												X	X	X	X	X												12/4/96	34	BNWS04	1/6/97	32	96-20	Added pH
11/1/96	11SS11D		X	X	X	X	X	X											X	X	X	X	X	X											12/4/96	33	BNWS04	1/6/97	32	96-20	
																																				0			0		
11/2/96	17SS01A		X	X	X	X	X				X				X				X	X	X	X	X				X				X				12/11/96	39	BNWS08	1/6/97	25	96-23	
11/2/96	17SS01B		X	X	X	X	X												X	X	X	X	X												12/11/96	39	BNWS08	1/6/97	25	96-23	Extracted outside of holding time (4 days)
11/2/96	17SS02A		X	X	X	X	X												X	X	X	X	X												12/11/96	39	BNWS08	1/6/97	25	96-23	
11/2/96	17SS02B		X	X	X	X	X												X	X	X	X	X												12/11/96	39	BNWS08	1/6/97	25	96-23	
11/3/96	17SS03A		X	X	X	X	X												X	X	X	X	X												12/9/96	36	BNWS07	1/6/97	27	96-21	
11/3/96	17SS03B		X	X	X	X	X												X	X	X	X	X												12/9/96	36	BNWS07	1/6/97	27	96-21	
11/2/96	17SS05A		X	X	X	X	X												X	X	X	X	X												12/11/96	39	BNWS08	1/6/97	25	96-23	
11/2/96	17SS05B		X	X	X	X	X												X	X	X	X	X												12/11/96	39	BNWS08	1/6/97	25	96-23	
11/3/96	17SS06A		X	X	X	X	X												X	X	X	X	X												12/9/96	36	BNWS07	1/6/97	27	96-21	
11/3/96	17SS06B		X	X	X	X	X												X	X	X	X	X												12/9/96	36	BNWS07	1/6/97	27	96-21	
11/2/96	17SS07A		X	X	X	X	X												X	X	X	X	X												12/11/96	39	BNWS08	1/6/97	25	96-23	
11/2/96	17SS07B		X	X	X	X	X												X	X	X	X	X												12/11/96	39	BNWS08	1/6/97	25	96-23	

CTO 354 - SURFACE SOIL
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

		Analysis Requested																Analysis Received																					
											Eng. Par.																Eng. Par.												
DATE SAMPLED	SAMPLE ID	TCL VOC	TCL SVOC	TCL Pesticides/PCBs	Nitramine Compounds	TAL Inorganics	Cyanide	pH			Total Organic Carbon	TKN	Ammonia	Nitrate/Nitrite	Cation Exchange Capacity	Grain Size	Bulk Density	TCL VOC	TCL SVOC	TCL Pesticides/PCBs	Nitramine Compounds	TAL Inorganics	Cyanide	pH			Total Organic Carbon	TKN	Ammonia	Nitrate/Nitrite	Cation Exchange Capacity	Grain Size	Bulk Density	DATE RECEIVED FROM THE LABORATORY	TURNAROUND TIME	LABORATORY SDG NO.	DATE RECEIVED FROM THE VALIDATOR	TURNAROUND TIME	VALIDATOR RELEASE NO.	COMMENTS
11/3/96	17SS08		X	X	X	X	X												X	X	X	X	X											12/9/96	36	BNWS07	1/6/97	27	96-21	MS/MSD
11/3/96	17SS09		X	X	X	X	X												X	X	X	X	X											12/9/96	36	BNWS07	1/6/97	27	96-21	
11/3/96	17SS10		X	X	X	X	X												X	X	X	X	X											12/9/96	36	BNWS07	1/6/97	27	96-21	
11/3/96	17SS11		X	X	X	X	X												X	X	X	X	X											12/9/96	36	BNWS07	1/6/97	27	96-21	
11/4/96	17SS12		X	X	X	X	X				X				X				X	X	X	X	X				X				X			12/9/96	35	BNWS07	1/6/97	27	96-21	
11/4/96	17SS13		X	X	X	X	X												X	X	X	X	X											12/9/96	35	BNWS07	1/6/97	27	96-21	
11/4/96	17SS14		X	X	X	X	X												X	X	X	X	X											12/9/96	35	BNWS07	1/6/97	27	96-21	
11/4/96	17SS15		X	X	X	X	X												X	X	X	X	X											12/9/96	35	BNWS07	1/6/97	27	96-21	
11/11/96	17SS16		X	X	X	X	X	X											X	X	X	X	X	X										12/19/96	38	BNWS11	1/6/97	17	96-25	MS/MSD
11/3/96	17SS08D		X	X	X	X	X												X	X	X	X	X											12/9/96	36	BNWS07	1/6/97	27	96-21	
11/4/96	17SS12D		X	X	X	X	X												X	X	X	X	X											12/9/96	35	BNWS07	1/6/97	27	96-21	
11/11/96	17SS16D		X	X	X	X	X	x											X	X	X	X	X											12/19/96	38	BNWS11	1/6/97	17	96-25	Cancel pH
																																			0			0		
																																			0			0		
COUNT		0	37	37	37	37	37	14	0	0	4	0	0	0	4	1	0	0	37	37	37	37	37	13	0	0	4	0	0	0	4	0	0							

CTO354 - SUBSURFACE SOIL
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

		Analysis Requested																	Analysis Received																							
											Eng. Par.																	Eng. Par.													
DATE SAMPLED	SAMPLE ID	TCL VOC	TCL SVOC	TCL Pesticides/PCBs	Nitramine Compounds	TAL Inorganics	Cyanide	pH			Total Organic Carbon	TKN	Ammonia	Nitrate/Nitrite	Grain Size	Cation Exchange Capacity	Bulk Density		TCL VOC	TCL SVOC	TCL Pesticides/PCBs	Nitramine Compounds	TAL Inorganics	Cyanide	pH			Total Organic Carbon	TKN	Ammonia	Nitrate/Nitrite	Grain Size	Cation Exchange Capacity	Bulk Density		DATE RECEIVED FROM THE LABORATORY	TURNAROUND TIME	LABORATORY SDG NO.	DATE RECEIVED FROM THE VALIDATOR	TURNAROUND TIME	VALIDATOR RELEASE NO.	COMMENTS
11/14/96	11SB12-02	X	X	X	X	X	X	X											X	X	X	X	X	X	X											12/23/96	39	BNWS12	1/6/97	13	96-25	Cancel pH for MS/MSD
11/14/96	11SB13-02	X	X	X	X	X	X	X											X	X	X	X	X	X	X											12/23/96	39	BNWS12	1/6/97	13	96-25	
11/14/96	11SB14-02	X	X	X	X	X	X	X											X	X	X	X	X	X	X											12/23/96	39	BNWS12	1/6/97	13	96-25	
11/14/96	11SB15-02	X	X	X	X	X	X	X			X			X	X	X	X		X	X	X	X	X	X	X			X			X	X	X	X		12/23/96	39	BNWS12	1/6/97	13	96-25	
11/14/96	11SB15-03							X			X			X	X	X	X								X			X			X	X	X	X		12/23/96	39	BNWS12		0		
11/13/96	11SB16-02	X	X	X	X	X	X	X											X	X	X	X	X	X	X											12/23/96	40	BNWS12	1/6/97	13	96-25	
11/14/96	11SB17-02	X	X	X	X	X	X	X											X	X	X	X	X	X	X											12/23/96	39	BNWS12	1/6/97	13	96-25	
11/14/96	11SB18-02	X	X	X	X	X	X	X											X	X	X	X	X	X	X											12/23/96	39	BNWS12	1/6/97	13	96-25	
11/14/96	11SB12-02D	X	X	X	X	X	X	X											X	X	X	X	X	X	X											12/23/96	39	BNWS12	1/6/97	13	96-25	
																																					0		0		
11/2/96	17TP01A-07	X	X	X	X	X	X												X	X	X	X	X	X												12/11/96	39	BNWS08	1/6/97	25	96-23	
11/2/96	17TP01B-07	X	X	X	X	X	X												X	X	X	X	X	X												12/11/96	39	BNWS08	1/6/97	25	96-23	Added CN
11/3/96	17TP02A-07	X	X	X	X	X	X				X	x	x			X			X	X	X	X	X	X				X					X			12/11/96	38	BNWS08	1/6/97	25	96-23	Cancel TKN, Ammonia
	17TP02B-07	TEST PIT END COLLAPSED																																								
	17TP03A-01	TEST PIT END COLLAPSED																																								
11/3/96	17TP03B-01	X	X	X	X	X	X				X	x	x			X			X	X	X	X	X	X				X					X			12/11/96	38	BNWS08	1/6/97	25	96-23	MS/MSD,Cancel TKN,Amm & MS/MSD for TOC,CEC,
	17TP04	SAMPLES NOT COLLECTED, FLOODED SITE																																			0		0		Revd TOC & CEC 1/7 for 17TP03B-01
11/2/96	17TP05A-03	X	X	X	X	X	X												X	X	X	X	X	X												12/11/96	39	BNWS08	1/6/97	25	96-23	Added CN
11/2/96	17TP05B-03	X	X	X	X	X	X												X	X	X	X	X	X												12/11/96	39	BNWS08	1/6/97	25	96-23	
11/3/96	17TP06A-03	X	X	X	X	X	X						x						X	X	X	X	X	X												12/11/96	38	BNWS08	1/6/97	25	96-23	Cancel Ammonia
11/3/96	17TP06B-03	X	X	X	X	X	X												X	X	X	X	X	X												12/11/96	38	BNWS08	1/6/97	25	96-23	
11/2/96	17TP07A-08	X	X	X	X	X	X												X	X	X	X	X	X												12/11/96	39	BNWS08	1/6/97	25	96-23	
11/2/96	17TP07B-08	X	X	X	X	X	X												X	X	X	X	X	X												12/9/96	37	BNWS07	1/6/97	27	96-21	MS/MSD FOR VOC
	17TP08	SAMPLES NOT COLLECTED, FLOODED SITE																																			0		0		
11/3/96	17TP03B-01D	X	X	X	X	X	X				x	x	x			x			X	X	X	X	X	X												12/11/96	38	BNWS08	1/6/97	25	96-23	Cancel TOC, TKN, Ammonia, CEC
																																					0		0		
																																					0		0		
COUNT		19	19	19	19	19	19	9	0	0	5	3	4	2	2	5	2	0	19	19	19	19	19	19	9	0	0	4	0	0	2	2	4	2	0						

CTO 354 - GROUNDWATER
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

		Analysis Requested															Analysis Received																				
									Eng. Par.																Eng. Par.												
DATE SAMPLED	SAMPLE ID	TCL VOC	TCL SVOC	TCL Pesticides/PCBs	Nitramine Compounds	TAL Total Inorganics	TAL Dissolved Inorganics	Cyanide	Nitrate/Nitrite	Methane/Ethane/Ethene/Propane	Bromide	Chloride	Sulfate	Ortho Phosphorous	TDS/TSS		TCL VOC	TCL SVOC	TCL Pesticides/PCBs	Nitramine Compounds	TAL Total Inorganics	TAL Dissolved Inorganics	Cyanide	Nitrate/Nitrite	TDS/TSS	Ortho-Phosphate	Bromide	Chloride	Sulfate	Methane/Ethane/Ethene/Propane		DATE RECEIVED FROM THE LABORATORY	TURNAROUND TIME	LABORATORY SDG NO.	DATE RECEIVED FROM THE VALIDATOR	TURNAROUND TIME	VALIDATOR RELEASE NO.	COMMENTS
11/14/96	11GW03-002	X	X	X	X	X	X	X	X						X		X	X	X	X	X	X	X	X	X							12/24/96	40	BNWS13	1/13/97	19	96-26	
11/16/96	11GW09-003	X	X	X	X	X	X	X	X						X		X	X	X	X	X	X	X	X	X							12/24/96	38	BNWS13	1/13/97	19	96-26	
11/15/96	11GW11-002	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		12/24/96	39	BNWS13	1/13/97	19	96-26	MS/MSD
11/16/96	11GW11A-002	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		12/24/96	38	BNWS13	1/13/97	19	96-26	
11/15/96	11GW11D-002	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X	X								12/24/96	39	BNWS13	1/13/97	19	96-26	
																																	0			0		
11/15/96	17GW01-003	X	X	X	X	X	X	X	X						X		X	X	X	X	X	X	X	X	X							12/24/96	39	BNWS14	1/13/97	19	96-26	
11/15/96	17GW02-003	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		12/24/96	39	BNWS14	1/13/97	19	96-26	
11/15/96	17GW10-002	X	X	X	X	X	X	X	X						X		X	X	X	X	X	X	X	X	X							12/24/96	39	BNWS14	1/13/97	19	96-26	
11/15/96	17GW16-002	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		12/24/96	39	BNWS14	1/13/97	19	96-26	MS/MSD
11/15/96	17GW16D-002	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X	X								12/24/96	39	BNWS14	1/13/97	19	96-26	
																																	0			0		
COUNT		10	10	10	10	10	10	10	10	4	4	4	4	4	8	0	10	10	10	10	10	10	10	10	8	4	4	4	4	4	0							

CTO 354 - SEDIMENT
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

		Analysis Requested															Analysis Received																					
										Eng. Par.																Eng. Par.												
DATE SAMPLED	SAMPLE ID	TCL VOC	TCL SVOC	TCL Pesticides/PCBs	Nitramine Compounds	TAL Total Inorganics	Cyanide	pH		Total Organic Carbon	Cation Exchange Capacity	Bulk Density	TKN	Ammonia	Nitrate/Nitrite	Grain Size	TCL VOC	TCL SVOC	TCL Pesticides/PCBs	Nitramine Compounds	TAL Total Inorganics	Cyanide	pH			Total Organic Carbon	Cation Exchange Capacity	Bulk Density	TKN	Ammonia	Nitrate/Nitrite	Grain Size	DATE RECEIVED FROM THE LABORATORY	TURNAROUND TIME	LABORATORY SDG NO.	DATE RECEIVED FROM THE VALIDATOR	TURNAROUND TIME	VALIDATOR RELEASE NO.	COMMENTS
11/1/96	11SD03-01	X	X	X	X	X	X	X		X	X	X	x	x	X	X	X	X	X	X	X	X	X			X	X	X			X	X	12/4/96	33	BNWS04	1/6/97	32	96-20	MS/MSD-Nitramines, Added TOC, cancel TKN, Amm
11/1/96	11SD03-02	X	X	X	X	X	X	X		X	X	X	x	x	X	X	X	X	X	X	X	X	X			X	X	X			X	X	12/4/96	33	BNWS04	1/6/97	32	96-20	Added TOC, cancel TKN, ammonia
11/1/96	11SD04-01	X	X	X	X	X	X	X		X	X	X	x	x	X	X	X	X	X	X	X	X	X			X	X	X			X	X	12/4/96	33	BNWS04	1/6/97	32	96-20	Added TOC, cancel TKN, ammonia
11/1/96	11SD04-02	X	X	X	X	X	X	X		X	X	X	x	x	X	X	X	X	X	X	X	X	X			X	X	X			X	X	12/4/96	33	BNWS04	1/6/97	32	96-20	Added TOC, cancel TKN, ammonia,MS/MSD-VOC
11/1/96	11SD03-01D	X	X	X	X	X	X										X	X	X	X	X	X											12/4/96	33	BNWS04	1/6/97	32	96-20	Cancel TKN, Ammonia - Sample ID Changed
																																		0			0		
COUNT		5	5	5	5	5	5	4	0	4	4	4	4	4	4	4	5	5	5	5	5	5	4	0	0	4	4	4	0	0	4	4							

CTO 354 - TRIP, RINSATE, AND FIELD BLANKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

		Analysis Requested																	Analysis Received																							
									Eng. Par.																	Eng. Par.																
DATE SAMPLED	SAMPLE ID	TCL VOC	TCL SVOC	TCL Pesticides/PCBs	Nitramine Compounds	TAL Total Inorganics	TAL Dissolved Inorganics	Cyanide	Nitrate/Nitrite	Methane/Ethene/Ethane/Propane	Bromide	Chloride	Sulfate	Ortho Phosphorous	TDS/TSS	TKN	Total Organic Carbon	Ammonia	TCL VOC	TCL SVOC	TCL Pesticides/PCBs	Nitramine Compounds	TAL Total Inorganics	TAL Dissolved Inorganics	Cyanide	Nitrate/Nitrite	Methane/Ethane/Ethene/Propane	Ortho-Phosphate	Bromide	Chloride	Sulfate	TKN	Total Organic Carbon	Ammonia	DATE RECEIVED FROM THE LABORATORY	TURNAROUND TIME	LABORATORY SDG NO.	DATE RECEIVED FROM THE VALIDATOR	TURNAROUND TIME	VALIDATOR RELEASE NO.	COMMENTS
11/12/96	FBRIG-11/96	X	X	X	X	X	X	X	X	X	X	X	X	X	x				X	X	X	X	X	X	X	X	X	X	X	X	X				12/20/96	38	BNWS09	1/13/97	23	96-26	Cancel TDS/TSS analysis
11/12/96	FBDI-11/96	X	X	X	X	X	X	X	X	X	X	X	X	X	x				X	X	X	X	X	X	X	X	X	X	X	X	X				12/20/96	38	BNWS09	1/13/97	23	96-26	Cancel TDS/TSS analysis
11/12/96	FBLG-11/96	X	X	X	X	X	X	X	X	X	X	X	X	X	x				X	X	X	X	X	X	X	X	X	X	X	X	X				12/20/96	38	BNWS09	1/13/97	23	96-26	Cancel TDS/TSS analysis
																																				0			0		
11/1/96	11/22TB03	X																	X																12/9/96	38	BNWS01	12/19/96	10	96-22	
11/4/96	17/22TB04	X																	X																12/9/96	35	BNWS01	12/19/96	10	96-22	
11/14/96	22/21/11TB08	X																	X																12/20/96	36	BNWS09	1/13/97	23	96-26	
11/15/96	11/17TB09	X																	X																12/24/96	39	BNWS13	1/13/97	19	96-26	
11/16/96	4/11/21TB10	X																	X																12/26/96	40	BNWS15	1/13/97	17	96-26	
																																				0			0		
10/31/96	4/11/22RB03	X	X	X	X	X		X	X							X		X	X	X	X	X	X		X	X						X		X	12/4/96	34	BNWS04	1/6/97	32	96-20	
11/1/96	11/22RB04	X	X	X	X	X		X	X							X	X	X	X	X	X	X	X		X	X						X	X	X	12/9/96	38	BNSW01	12/19/96	10	96-22	TOC added
11/2/96	17/22RB04	X	X	X	X	X		X	X							X	X	X	X	X	X	X	X		X	X						X	X	X	12/9/96	37	BNSW01	12/19/96	10	96-22	
11/3/96	17/22RB05	X	X	X	X	X		X	X							X	X	X	X	X	X	X	X		X	X						X	X	X	12/9/96	36	BNSW01	12/19/96	10	96-22	
11/4/96	17/22RB06	X	X	X	X	X		X	X							X	X	X	X	X	X	X	X		X	X						X	X	X	12/9/96	35	BNSW01	12/19/96	10	96-22	MS/MSD-Total Inorganics and Cyanide
11/14/96	22/11/21RB09	X	X	X	X	X	X	X											X	X	X	X	X	X	X										12/20/96	36	BNWS09	1/13/97	23	96-26	MS/MSD-Total and Dissolved Inorganics,Cyanide
11/15/96	11/17RB10	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X	X									12/24/96	39	BNWS13	1/13/97	19	96-26	
11/16/96	4/11/21RB11	X	X	X	X	X	X	X											X	X	X	X	X	X	X										12/26/96	40	BNWS15	1/13/97	17	96-26	
																																				0			0		
COUNT		16	11	11	11	11.	6	11	9	3	3	3	3	3	3	5	4	5	16	11	11	11	11	6	11	9	3	3	3	3	3	5	4	5							

APPENDIX F
ROUND TWO ANALYTICAL LABORATORY RESULTS

DATA QUALIFIER DEFINITIONS AND NOTES

NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA

QUALIFIER DEFINITIONS

(NO CODE) = Confirmed identification.

B = Not detected substantially above the level reported in laboratory or field blanks.

J = Analyte present. Reported value may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.

N = Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.

R = Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.

U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.

UJ = Not detected. Quantitation limit may be inaccurate or imprecise.

UL = Not detected. Quantitation limit is probably higher.

NOTES

mg/kg = milligrams per kilogram.

mg/l = milligrams per liter.

ug/kg = micrograms per kilogram.

ug/l = micrograms per liter.

NA = Not analyzed.

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SS01	11SS02	11SS03	11SS04	11SS05	11SS06	11SS06D	11SS07
DATE SAMPLED	11/01/96	10/31/96	10/31/96	11/01/96	11/01/96	10/31/96	10/31/96	10/31/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
SEMIVOLATILES (ug/kg)								
PHENOL	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
BIS(2-CHLOROETHYL)ETHER	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
2-CHLOROPHENOL	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
1,3-DICHLOROBENZENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
1,4-DICHLOROBENZENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
1,2-DICHLOROBENZENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
2-METHYLPHENOL	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
2,2'-OXYBIS(1-CHLOROPROPANE)	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
N-NITROSO-DI-N-PROPYLAMINE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
4-METHYLPHENOL	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
HEXACHLOROETHANE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
NITROBENZENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
ISOPHORONE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
2-NITROPHENOL	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
2,4-DIMETHYLPHENOL	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
BIS(2-CHLOROETHOXY)METHANE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
2,4-DICHLOROPHENOL	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
1,2,4-TRICHLOROBENZENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
NAPHTHALENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
4-CHLOROANILINE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
HEXACHLOROBUTADIENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
4-CHLORO-3-METHYLPHENOL	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
2-METHYLNAPHTHALENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
HEXACHLOROCYCLOPENTADIENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
2,4,6-TRICHLOROPHENOL	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
2,4,5-TRICHLOROPHENOL	1000 U	960 U	960 U	930 U	920 U	950 U	950 U	920 U
2-CHLORONAPHTHALENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
2-NITROANILINE	1000 U	960 U	960 U	930 U	920 U	950 U	950 U	920 U
DIMETHYLPHTHALATE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
ACENAPHTHYLENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
2,6-DINITROTOLUENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
3-NITROANILINE	1000 U	960 U	960 U	930 U	920 U	950 U	950 U	920 U
ACENAPHTHENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
2,4-DINITROPHENOL	1000 U	960 U	960 U	930 U	920 U	950 U	950 U	920 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SS01	11SS02	11SS03	11SS04	11SS05	11SS06	11SS06D	11SS07
DATE SAMPLED	11/01/96	10/31/96	10/31/96	11/01/96	11/01/96	10/31/96	10/31/96	10/31/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
SEMIVOLATILES (ug/kg) (cont)								
4-NITROPHENOL	1000 U	960 U	960 U	930 U	920 U	950 U	950 U	920 U
DIBENZOFURAN	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
2,4-DINITROTOLUENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
DIETHYLPHTHALATE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
4-CHLOROPHENYL-PHENYLETHER	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
FLUORENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
4-NITROANILINE	1000 U	960 U	960 U	930 U	920 U	950 U	950 U	920 U
4,6-DINITRO-2-METHYLPHENOL	1000 U	960 U	960 U	930 U	920 U	950 U	950 U	920 U
N-NITROSODIPHENYLAMINE (1)	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
4-BROMOPHENYL-PHENYLETHER	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
HEXACHLOROBENZENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
PENTACHLOROPHENOL	1000 U	960 U	960 U	930 U	920 U	950 U	950 U	920 U
PHENANTHRENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
ANTHRACENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
CARBAZOLE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
DI-N-BUTYLPHTHALATE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
FLUORANTHENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
PYRENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
BUTYLBENZYLPHTHALATE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
3,3'-DICHLOROBENZIDINE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
BENZO(A)ANTHRACENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
CHRYSENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
BIS(2-ETHYLHEXYL)PHTHALATE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
DI-N-OCTYLPHTHALATE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
BENZO(B)FLUORANTHENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
BENZO(K)FLUORANTHENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
BENZO(A)PYRENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
INDENO(1,2,3-CD)PYRENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
DIBENZO(A,H)ANTHRACENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U
BENZO(G,H,I)PERYLENE	420 U	390 U	400 U	380 U	380 U	390 U	390 U	380 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SS01	11SS02	11SS03	11SS04	11SS05	11SS06	11SS06D	11SS07
DATE SAMPLED	11/01/96	10/31/96	10/31/96	11/01/96	11/01/96	10/31/96	10/31/96	10/31/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
PESTICIDES/PCBS (ug/kg)								
ALPHA-BHC	21 U	20 U	20 U	19 U	19 U	2 U	2 U	19 U
BETA-BHC	21 U	20 U	20 U	19 U	19 U	2 U	2 U	19 U
DELTA-BHC	21 U	20 U	20 U	19 U	19 U	2 U	2 U	19 U
GAMMA-BHC (LINDANE)	21 U	20 U	20 U	19 U	19 U	2 U	2 U	19 U
HEPTACHLOR	21 U	20 U	20 U	19 U	19 U	2 U	2 U	19 U
ALDRIN	21 U	20 U	20 U	19 U	19 U	2 U	2 U	19 U
HEPTACHLOR EPOXIDE	21 U	20 U	20 U	19 U	19 U	2 U	2 U	19 U
ENDOSULFAN I	21 U	20 U	20 U	19 U	19 U	2 U	2 U	19 U
DIELDRIN	42 U	40 U	40 U	38 U	38 U	4 U	4 U	38 U
4,4'-DDE	42 U	40 U	40 U	38 U	38 U	4 U	4 U	38 U
ENDRIN	42 U	40 U	40 U	38 U	38 U	4 U	4 U	38 U
ENDOSULFAN II	42 U	40 U	40 U	38 U	38 U	0.36 J	0.29 J	38 U
4,4'-DDD	42 U	40 U	40 U	38 U	38 U	4 U	4 U	38 U
ENDOSULFAN SULFATE	42 U	40 U	40 U	38 U	38 U	4 U	4 U	38 U
4,4'-DDT	42 U	8.3 J	47 J	38 U	3.8 J	0.1 J	0.58 J	38 U
METHOXYCHLOR	210 U	200 U	200 U	190 U	190 U	20 U	0.47 J	190 U
ENDRIN KETONE	42 U	40 U	40 U	38 U	38 U	4 U	4 U	38 U
ENDRIN ALDEHYDE	42 U	40 U	40 U	38 U	38 U	4 U	4 U	38 U
ALPHA-CHLORDANE	21 U	20 U	20 U	19 U	19 U	2 U	2 U	19 U
GAMMA-CHLORDANE	21 U	20 U	20 U	19 U	19 U	2 U	2 U	19 U
TOXAPHENE	2100 U	2000 U	2000 U	1900 U	1900 U	200 U	200 U	1900 U
AROCLOR-1016	420 U	400 U	400 U	380 U	380 U	40 U	40 U	380 U
AROCLOR-1221	850 U	800 U	800 U	770 U	760 U	79 U	79 U	760 U
AROCLOR-1232	420 U	400 U	400 U	380 U	380 U	40 U	40 U	380 U
AROCLOR-1242	420 U	400 U	400 U	380 U	380 U	40 U	40 U	380 U
AROCLOR-1248	420 U	400 U	400 U	380 U	380 U	40 U	40 U	380 U
AROCLOR-1254	420 U	400 U	400 U	380 U	380 U	40 U	40 U	380 U
AROCLOR-1260	420 U	400 U	400 U	380 U	380 U	40 U	40 U	380 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SS01	11SS02	11SS03	11SS04	11SS05	11SS06	11SS06D	11SS07
DATE SAMPLED	11/01/96	10/31/96	10/31/96	11/01/96	11/01/96	10/31/96	10/31/96	10/31/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
EXPLOSIVES (mg/kg)								
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DNT/2,6-DNT	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
AMINO-DNTS	0.52	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.071 J	0.25 U
RDX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRYL	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SS08	11SS09	11SS10	11SS11	11SS11D
DATE SAMPLED	11/01/96	11/01/96	11/01/96	11/01/96	11/01/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"
SEMIVOLATILES (ug/kg)					
PHENOL	370 U	430 U	400 U	400 U	380 U
BIS(2-CHLOROETHYL)ETHER	370 U	430 U	400 U	400 U	380 U
2-CHLOROPHENOL	370 U	430 U	400 U	400 U	380 U
1,3-DICHLOROBENZENE	370 U	430 U	400 U	400 U	380 U
1,4-DICHLOROBENZENE	370 U	430 U	400 U	400 U	380 U
1,2-DICHLOROBENZENE	370 U	430 U	400 U	400 U	380 U
2-METHYLPHENOL	370 U	430 U	400 U	400 U	380 U
2,2'-OXYBIS(1-CHLOROPROPANE)	370 U	430 U	400 U	400 U	380 U
N-NITROSO-DI-N-PROPYLAMINE	370 U	430 U	400 U	400 U	380 U
4-METHYLPHENOL	370 U	430 U	400 U	400 U	380 U
HEXACHLOROETHANE	370 U	430 U	400 U	400 U	380 U
NITROBENZENE	370 U	430 U	400 U	400 U	380 U
ISOPHORONE	370 U	430 U	400 U	400 U	380 U
2-NITROPHENOL	370 U	430 U	400 U	400 U	380 U
2,4-DIMETHYLPHENOL	370 U	430 U	400 U	400 U	380 U
BIS(2-CHLOROETHOXY)METHANE	370 U	430 U	400 U	400 U	380 U
2,4-DICHLOROPHENOL	370 U	430 U	400 U	400 U	380 U
1,2,4-TRICHLOROBENZENE	370 U	430 U	400 U	400 U	380 U
NAPHTHALENE	370 U	430 U	400 U	400 U	380 U
4-CHLOROANILINE	370 U	430 U	400 U	400 U	380 U
HEXACHLOROBUTADIENE	370 U	430 U	400 U	400 U	380 U
4-CHLORO-3-METHYLPHENOL	370 U	430 U	400 U	400 U	380 U
2-METHYLNAPHTHALENE	370 U	430 U	400 U	400 U	380 U
HEXACHLOROCYCLOPENTADIENE	370 U	430 U	400 U	400 U	380 U
2,4,6-TRICHLOROPHENOL	370 U	430 U	400 U	400 U	380 U
2,4,5-TRICHLOROPHENOL	900 U	1000 U	970 U	970 U	930 U
2-CHLORONAPHTHALENE	370 U	430 U	400 U	400 U	380 U
2-NITROANILINE	900 U	1000 U	970 U	970 U	930 U
DIMETHYLPHTHALATE	370 U	430 U	400 U	400 U	380 U
ACENAPHTHYLENE	370 U	430 U	400 U	400 U	380 U
2,6-DINITROTOLUENE	370 U	430 U	400 U	400 U	380 U
3-NITROANILINE	900 U	1000 U	970 U	970 U	930 U
ACENAPHTHENE	370 U	430 U	400 U	400 U	380 U
2,4-DINITROPHENOL	900 U	1000 U	970 U	970 U	930 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SS08	11SS09	11SS10	11SS11	11SS11D
DATE SAMPLED	11/01/96	11/01/96	11/01/96	11/01/96	11/01/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"
SEMIVOLATILES (ug/kg) (cont)					
4-NITROPHENOL	900 U	1000 U	970 U	970 U	930 U
DIBENZOFURAN	370 U	430 U	400 U	400 U	380 U
2,4-DINITROTOLUENE	370 U	430 U	400 U	400 U	380 U
DIETHYLPHTHALATE	370 U	430 U	400 U	400 U	380 U
4-CHLOROPHENYL-PHENYLETHER	370 U	430 U	400 U	400 U	380 U
FLUORENE	370 U	430 U	400 U	400 U	380 U
4-NITROANILINE	900 U	1000 U	970 U	970 U	930 U
4,6-DINITRO-2-METHYLPHENOL	900 U	1000 U	970 U	970 U	930 U
N-NITROSODIPHENYLAMINE (1)	370 U	430 U	400 U	400 U	380 U
4-BROMOPHENYL-PHENYLETHER	370 U	430 U	400 U	400 U	380 U
HEXACHLOROBENZENE	370 U	430 U	400 U	400 U	380 U
PENTACHLOROPHENOL	900 U	1000 U	970 U	970 U	930 U
PHENANTHRENE	370 U	430 U	400 U	400 U	380 U
ANTHRACENE	370 U	430 U	400 U	400 U	380 U
CARBAZOLE	370 U	430 U	400 U	400 U	380 U
DI-N-BUTYLPHTHALATE	370 U	430 U	400 U	400 U	380 U
FLUORANTHENE	370 U	430 U	400 U	400 U	380 U
PYRENE	370 U	430 U	400 U	400 U	380 U
BUTYLBENZYLPHTHALATE	370 U	430 U	400 U	400 U	380 U
3,3'-DICHLOROBENZIDINE	370 U	430 U	400 U	400 U	380 U
BENZO(A)ANTHRACENE	370 U	430 U	400 U	400 U	380 U
CHRYSENE	370 U	430 U	400 U	400 U	380 U
BIS(2-ETHYLHEXYL)PHTHALATE	370 U	430 U	120 J	400 U	380 U
DI-N-OCTYLPHTHALATE	370 U	430 U	400 U	400 U	380 U
BENZO(B)FLUORANTHENE	370 U	430 U	400 U	400 U	380 U
BENZO(K)FLUORANTHENE	370 U	430 U	400 U	400 U	380 U
BENZO(A)PYRENE	370 U	430 U	400 U	400 U	380 U
INDENO(1,2,3-CD)PYRENE	370 U	430 U	400 U	400 U	380 U
DIBENZO(A,H)ANTHRACENE	370 U	430 U	400 U	400 U	380 U
BENZO(G,H,I)PERYLENE	370 U	430 U	400 U	400 U	380 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SS08	11SS09	11SS10	11SS11	11SS11D
DATE SAMPLED	11/01/96	11/01/96	11/01/96	11/01/96	11/01/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"
PESTICIDES/PCBS (ug/kg)					
ALPHA-BHC	18 U	22 U	20 U	20 U	19 U
BETA-BHC	18 U	22 U	20 U	20 U	19 U
DELTA-BHC	18 U	22 U	20 U	20 U	19 U
GAMMA-BHC (LINDANE)	18 U	22 U	20 U	20 U	19 U
HEPTACHLOR	18 U	22 U	20 U	20 U	19 U
ALDRIN	18 U	22 U	20 U	20 U	19 U
HEPTACHLOR EPOXIDE	18 U	22 U	20 U	20 U	19 U
ENDOSULFAN I	18 U	22 U	20 U	20 U	19 U
DIELDRIN	37 U	43 U	40 U	40 U	39 U
4,4'-DDE	37 U	43 U	40 U	40 U	39 U
ENDRIN	37 U	43 U	40 U	40 U	39 U
ENDOSULFAN II	37 U	43 U	40 U	40 U	39 U
4,4'-DDD	37 U	43 U	40 U	40 U	39 U
ENDOSULFAN SULFATE	37 U	43 U	40 U	40 U	39 U
4,4'-DDT	37 U	43 U	40 U	40 U	39 U
METHOXYCHLOR	180 U	220 U	200 U	200 U	190 U
ENDRIN KETONE	37 U	43 U	40 U	40 U	39 U
ENDRIN ALDEHYDE	37 U	43 U	40 U	40 U	39 U
ALPHA-CHLORDANE	18 U	22 U	20 U	20 U	19 U
GAMMA-CHLORDANE	18 U	22 U	20 U	20 U	19 U
TOXAPHENE	1800 U	2200 U	2000 U	2000 U	1900 U
AROCLOR-1016	370 U	430 U	400 U	400 U	390 U
AROCLOR-1221	740 U	860 U	810 U	810 U	770 U
AROCLOR-1232	370 U	430 U	400 U	400 U	390 U
AROCLOR-1242	370 U	430 U	400 U	400 U	390 U
AROCLOR-1248	370 U	430 U	400 U	400 U	390 U
AROCLOR-1254	370 U	430 U	400 U	400 U	390 U
AROCLOR-1260	370 U	430 U	400 U	400 U	390 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SS08	11SS09	11SS10	11SS11	11SS11D
DATE SAMPLED	11/01/96	11/01/96	11/01/96	11/01/96	11/01/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"
EXPLOSIVES (mg/kg)					
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DNT/2,6-DNT	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.37	0.25 U	0.25 U
HMX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
AMINO-DNTS	0.25 U	0.25 U	0.59	0.25 U	0.25 U
RDX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRYL	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg)								
PHENOL	370 U	430 U	ND	ND		0/13	NA	NA
BIS(2-CHLOROETHYL)ETHER	370 U	430 U	ND	ND		0/13	NA	NA
2-CHLOROPHENOL	370 U	430 U	ND	ND		0/13	NA	NA
1,3-DICHLOROBENZENE	370 U	430 U	ND	ND		0/13	NA	NA
1,4-DICHLOROBENZENE	370 U	430 U	ND	ND		0/13	NA	NA
1,2-DICHLOROBENZENE	370 U	430 U	ND	ND		0/13	NA	NA
2-METHYLPHENOL	370 U	430 U	ND	ND		0/13	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	370 U	430 U	ND	ND		0/13	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	370 U	430 U	ND	ND		0/13	NA	NA
4-METHYLPHENOL	370 U	430 U	ND	ND		0/13	NA	NA
HEXACHLOROETHANE	370 U	430 U	ND	ND		0/13	NA	NA
NITROBENZENE	370 U	430 U	ND	ND		0/13	NA	NA
ISOPHORONE	370 U	430 U	ND	ND		0/13	NA	NA
2-NITROPHENOL	370 U	430 U	ND	ND		0/13	NA	NA
2,4-DIMETHYLPHENOL	370 U	430 U	ND	ND		0/13	NA	NA
BIS(2-CHLOROETHOXY)METHANE	370 U	430 U	ND	ND		0/13	NA	NA
2,4-DICHLOROPHENOL	370 U	430 U	ND	ND		0/13	NA	NA
1,2,4-TRICHLOROBENZENE	370 U	430 U	ND	ND		0/13	NA	NA
NAPHTHALENE	370 U	430 U	ND	ND		0/13	NA	NA
4-CHLOROANILINE	370 U	430 U	ND	ND		0/13	NA	NA
HEXACHLOROBUTADIENE	370 U	430 U	ND	ND		0/13	NA	NA
4-CHLORO-3-METHYLPHENOL	370 U	430 U	ND	ND		0/13	NA	NA
2-METHYLNAPHTHALENE	370 U	430 U	ND	ND		0/13	NA	NA
HEXACHLOROCYCLOPENTADIENE	370 U	430 U	ND	ND		0/13	NA	NA
2,4,6-TRICHLOROPHENOL	370 U	430 U	ND	ND		0/13	NA	NA
2,4,5-TRICHLOROPHENOL	900 U	1000 U	ND	ND		0/13	NA	NA
2-CHLORONAPHTHALENE	370 U	430 U	ND	ND		0/13	NA	NA
2-NITROANILINE	900 U	1000 U	ND	ND		0/13	NA	NA
DIMETHYLPHTHALATE	370 U	430 U	ND	ND		0/13	NA	NA
ACENAPHTHYLENE	370 U	430 U	ND	ND		0/13	NA	NA
2,6-DINITROTOLUENE	370 U	430 U	ND	ND		0/13	NA	NA
3-NITROANILINE	900 U	1000 U	ND	ND		0/13	NA	NA
ACENAPHTHENE	370 U	430 U	ND	ND		0/13	NA	NA
2,4-DINITROPHENOL	900 U	1000 U	ND	ND		0/13	NA	NA

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg) (cont)								
4-NITROPHENOL	900 U	1000 U	ND	ND		0/13	NA	NA
DIBENZOFURAN	370 U	430 U	ND	ND		0/13	NA	NA
2,4-DINITROTOLUENE	370 U	430 U	ND	ND		0/13	NA	NA
DIETHYLPHTHALATE	370 U	430 U	ND	ND		0/13	NA	NA
4-CHLOROPHENYL-PHENYLETHER	370 U	430 U	ND	ND		0/13	NA	NA
FLUORENE	370 U	430 U	ND	ND		0/13	NA	NA
4-NITROANILINE	900 U	1000 U	ND	ND		0/13	NA	NA
4,6-DINITRO-2-METHYLPHENOL	900 U	1000 U	ND	ND		0/13	NA	NA
N-NITROSODIPHENYLAMINE (1)	370 U	430 U	ND	ND		0/13	NA	NA
4-BROMOPHENYL-PHENYLETHER	370 U	430 U	ND	ND		0/13	NA	NA
HEXACHLOROBENZENE	370 U	430 U	ND	ND		0/13	NA	NA
PENTACHLOROPHENOL	900 U	1000 U	ND	ND		0/13	NA	NA
PHENANTHRENE	370 U	430 U	ND	ND		0/13	NA	NA
ANTHRACENE	370 U	430 U	ND	ND		0/13	NA	NA
CARBAZOLE	370 U	430 U	ND	ND		0/13	NA	NA
DI-N-BUTYLPHTHALATE	370 U	430 U	ND	ND		0/13	NA	NA
FLUORANTHENE	370 U	430 U	ND	ND		0/13	NA	NA
PYRENE	370 U	430 U	ND	ND		0/13	NA	NA
BUTYLBENZYLPHTHALATE	370 U	430 U	ND	ND		0/13	NA	NA
3,3'-DICHLOROBENZIDINE	370 U	430 U	ND	ND		0/13	NA	NA
BENZO(A)ANTHRACENE	370 U	430 U	ND	ND		0/13	NA	NA
CHRYSENE	370 U	430 U	ND	ND		0/13	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	370 U	430 U	120 J	120 J	11SS10	1/13	120.00	120.00
DI-N-OCTYLPHTHALATE	370 U	430 U	ND	ND		0/13	NA	NA
BENZO(B)FLUORANTHENE	370 U	430 U	ND	ND		0/13	NA	NA
BENZO(K)FLUORANTHENE	370 U	430 U	ND	ND		0/13	NA	NA
BENZO(A)PYRENE	370 U	430 U	ND	ND		0/13	NA	NA
INDENO(1,2,3-CD)PYRENE	370 U	430 U	ND	ND		0/13	NA	NA
DIBENZO(A,H)ANTHRACENE	370 U	430 U	ND	ND		0/13	NA	NA
BENZO(G,H,I)PERYLENE	370 U	430 U	ND	ND		0/13	NA	NA

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDES/PCBS (ug/kg)								
ALPHA-BHC	2 U	22 U	ND	ND		0/13	NA	NA
BETA-BHC	2 U	22 U	ND	ND		0/13	NA	NA
DELTA-BHC	2 U	22 U	ND	ND		0/13	NA	NA
GAMMA-BHC (LINDANE)	2 U	22 U	ND	ND		0/13	NA	NA
HEPTACHLOR	2 U	22 U	ND	ND		0/13	NA	NA
ALDRIN	2 U	22 U	ND	ND		0/13	NA	NA
HEPTACHLOR EPOXIDE	2 U	22 U	ND	ND		0/13	NA	NA
ENDOSULFAN I	2 U	22 U	ND	ND		0/13	NA	NA
DIELDRIN	4 U	43 U	ND	ND		0/13	NA	NA
4,4'-DDE	4 U	43 U	ND	ND		0/13	NA	NA
ENDRIN	4 U	43 U	ND	ND		0/13	NA	NA
ENDOSULFAN II	37 U	43 U	0.29 J	0.36 J	11SS06	2/13	0.33	0.33
4,4'-DDD	4 U	43 U	ND	ND		0/13	NA	NA
ENDOSULFAN SULFATE	4 U	43 U	ND	ND		0/13	NA	NA
4,4'-DDT	37 U	43 U	0.1 J	47 J	11SS03	5/13	11.96	3.80
METHOXYCHLOR	20 U	220 U	0.47 J	0.47 J	11SS06D	1/13	0.47	0.47
ENDRIN KETONE	4 U	43 U	ND	ND		0/13	NA	NA
ENDRIN ALDEHYDE	4 U	43 U	ND	ND		0/13	NA	NA
ALPHA-CHLORDANE	2 U	22 U	ND	ND		0/13	NA	NA
GAMMA-CHLORDANE	2 U	22 U	ND	ND		0/13	NA	NA
TOXAPHENE	200 U	2200 U	ND	ND		0/13	NA	NA
AROCLOR-1016	40 U	430 U	ND	ND		0/13	NA	NA
AROCLOR-1221	79 U	860 U	ND	ND		0/13	NA	NA
AROCLOR-1232	40 U	430 U	ND	ND		0/13	NA	NA
AROCLOR-1242	40 U	430 U	ND	ND		0/13	NA	NA
AROCLOR-1248	40 U	430 U	ND	ND		0/13	NA	NA
AROCLOR-1254	40 U	430 U	ND	ND		0/13	NA	NA
AROCLOR-1260	40 U	430 U	ND	ND		0/13	NA	NA

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
EXPLOSIVES (mg/kg)								
1,3-DINITROBENZENE	0.25 U	0.25 U	ND	ND		0/13	NA	NA
2,4-DNT/2,6-DNT	0.25 U	0.25 U	ND	ND		0/13	NA	NA
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.37	0.37	11SS10	1/13	0.37	0.37
HMX	0.5 U	0.5 U	ND	ND		0/13	NA	NA
NITROBENZENE	0.25 U	0.25 U	ND	ND		0/13	NA	NA
2-NITROTOLUENE	0.25 U	0.25 U	ND	ND		0/13	NA	NA
3-NITROTOLUENE	0.25 U	0.25 U	ND	ND		0/13	NA	NA
AMINO-DNTS	0.25 U	0.25 U	0.071 J	0.59	11SS10	3/13	0.39	0.52
RDX	0.5 U	0.5 U	ND	ND		0/13	NA	NA
TETRYL	0.65 U	0.65 U	ND	ND		0/13	NA	NA
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	ND	ND		0/13	NA	NA

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SS01	11SS02	11SS03	11SS04	11SS05	11SS06	11SS06D	11SS07
DATE SAMPLED	11/01/96	10/31/96	10/31/96	11/01/96	11/01/96	10/31/96	10/31/96	10/31/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
TOTAL INORGANICS (mg/kg)								
ALUMINUM	10300	6430	4530	4880	4570	4230	5400	3400
ANTIMONY	1	0.72 U	0.89 B	0.7 U	0.69 U	0.72 U	0.73 B	0.69 U
ARSENIC	15.7	2.8	2.4	2.2	2.2	2.1	2.1	1.6
BARIUM	65.4	105	49.9	65.2	102	58.2	63.8	68.8
BERYLLIUM	0.47	0.24 U	0.24 U	0.23 U	0.23 U	0.24 U	0.24 U	0.23 U
CADMIUM	0.69	1.1	0.67	0.23 U	0.36	0.47	0.48	0.41
CALCIUM	31800	7050	1960	996	1070	1910	2640	3090
CHROMIUM	48.9	9.3	7.9	6.6	8.4	6.3	7.4	5.4
COBALT	10	2.3	1.8	1.6	1.7	1.7	1.8	1.1
COPPER	23.7	33.5	34.7	11.1	19.2	46.2	51.9	26.7
IRON	19300	5600	6400	13800	5300	5230	6420	3790
LEAD	24	33.4	29.7	9.1	16.8	35.7	36.3	23.1
MAGNESIUM	914	442	285	313	280	265	352	219
MANGANESE	116	91.8	106	82.3	162	148	154	122
MERCURY	0.2	0.08 B	0.15	0.06 U	0.06 B	0.06 U	0.06 U	0.09 B
NICKEL	9.2	4.8	3.8	3.6	3.7	4.2	4.9	3
POTASSIUM	792	372	247	220	187	184	263	144
SELENIUM	0.77 U	0.72 U	0.72 U	0.7 U	0.69 U	0.72 U	0.71 U	0.69 U
SILVER	20.8	6	7.1	0.55	1.3	2.5	2.7	2.8
SODIUM	170 B	40.9 U	41.3 U	39.7 U	39.3 U	40.8 U	40.5 U	39.2 U
THALLIUM	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
VANADIUM	33.4	13.1	9.9	10	9.9	9.3	10.5	6.6
ZINC	49.9 J	22.5 J	25.7 J	18.3 J	20.7 J	37 J	45.9 J	57 J
CYANIDE, TOTAL	0.25 B	0.17 U	0.18 B	0.2 B	0.22 B	0.17 U	0.21 B	0.2 B

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SS08	11SS09	11SS10	11SS11	11SS11D
DATE SAMPLED	11/01/96	11/01/96	11/01/96	11/01/96	11/01/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"
TOTAL INORGANICS (mg/kg)					
ALUMINUM	4950	7610	6480	4840	5490
ANTIMONY	0.75 B	0.78 U	0.77 B	0.86 B	1 B
ARSENIC	2.4	2.9	6.9	2.7	3
BARIUM	25.6	76.9	52.5	68.2	67.9
BERYLLIUM	0.22 U	0.26 U	0.24 U	0.24 U	0.23 U
CADMIUM	0.37	0.7	1	0.45	0.41
CALCIUM	671	10500	77800	1440	1590
CHROMIUM	6.8	12.1	11.6	6.6	8.8
COBALT	1.5	2.4	3.4	1.5	1.9
COPPER	25.5	35.7	220	19.3	44
IRON	5750	7560	8610	6340	7660
LEAD	20.2	29.4	48.5	15.5	14.7
MAGNESIUM	280	529	918	245	302
MANGANESE	95.2	94.3	117	75.1	75
MERCURY	0.1	0.17	1.6	0.14	0.11
NICKEL	3.3	5.6	4.8	3.1	5.8
POTASSIUM	234	456	505	186	250
SELENIUM	0.67 U	0.78 U	0.73 U	0.73 U	0.7 U
SILVER	3	8.3	28	1.9	1.7
SODIUM	38.3 U	44.6 U	504	41.7 U	39.7 U
THALLIUM	1.3 U	1.6 U	1.5 U	1.5 U	1.4 U
VANADIUM	11.2	15.9	14.8	10.1	11.7
ZINC	21.4 J	67.2 J	76.7 J	61 J	48.8 J
CYANIDE, TOTAL	0.16 U	0.32 B	0.31 B	0.23 B	0.23 B

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
TOTAL INORGANICS (mg/kg)								
ALUMINUM	NA	NA	3400	10300	11SS01	13/13	5623.85	4950.00
ANTIMONY	0.69 U	1 B	1	1	11SS01	1/13	1.00	1.00
ARSENIC	NA	NA	1.6	15.7	11SS01	13/13	3.77	2.40
BARIUM	NA	NA	25.6	105	11SS02	13/13	66.88	65.40
BERYLLIUM	0.22 U	0.26 U	0.47	0.47	11SS01	1/13	0.47	0.47
CADMIUM	0.23 U	0.23 U	0.36	1.1	11SS02	12/13	0.59	0.48
CALCIUM	NA	NA	671	77800	11SS10	13/13	10962.85	1960.00
CHROMIUM	NA	NA	5.4	48.9	11SS01	13/13	11.24	7.90
COBALT	NA	NA	1.1	10	11SS01	13/13	2.52	1.80
COPPER	NA	NA	11.1	220	11SS10	13/13	45.50	33.50
IRON	NA	NA	3790	19300	11SS01	13/13	7827.69	6400.00
LEAD	NA	NA	9.1	48.5	11SS10	13/13	25.88	24.00
MAGNESIUM	NA	NA	219	918	11SS10	13/13	411.08	302.00
MANGANESE	NA	NA	75	162	11SS05	13/13	110.67	106.00
MERCURY	0.06 U	0.09 B	0.1	1.6	11SS10	7/13	0.35	0.15
NICKEL	NA	NA	3	9.2	11SS01	13/13	4.60	4.20
POTASSIUM	NA	NA	144	792	11SS01	13/13	310.77	247.00
SELENIUM	0.67 U	0.78 U	ND	ND		0/13	NA	NA
SILVER	NA	NA	0.55	28	11SS10	13/13	6.67	2.80
SODIUM	38.3 U	170 B	504	504	11SS10	1/13	504.00	504.00
THALLIUM	1.3 U	1.6 U	ND	ND		0/13	NA	NA
VANADIUM	NA	NA	6.6	33.4	11SS01	13/13	12.80	10.50
ZINC	NA	NA	18.3 J	76.7 J	11SS10	13/13	42.47	45.90
CYANIDE, TOTAL	0.16 U	0.32 B	ND	ND		0/13	NA	NA

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SS01	11SS02	11SS03	11SS04	11SS05	11SS06	11SS06D	11SS07
DATE SAMPLED	11/01/96	10/31/96	10/31/96	11/01/96	11/01/96	10/31/96	10/31/96	10/31/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
ENGINEERING								
PERCENT MOISTURE (%)	21.9	16.4	17.1	13.8	13	16.1	15.6	12.7
PH (SOLID)	7.8	7.8	7.4	7.4	7.7	7.4	NA	8
TOTAL ORGANIC CARBON (mg/kg)	NA	14000	NA	NA	NA	NA	NA	NA
CATION EXCHANGE CAPACITY (mg/kg)	NA	3600	NA	NA	NA	NA	NA	NA

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SS08	11SS09	11SS10	11SS11	11SS11D
DATE SAMPLED	11/01/96	11/01/96	11/01/96	11/01/96	11/01/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"
ENGINEERING					
PERCENT MOISTURE (%)	10.7	23.3	17.5	17.9	13.9
PH (SOLID)	6.4	7.9	8	7.8	7.8
TOTAL ORGANIC CARBON (mg/kg)	NA	26000	NA	NA	NA
CATION EXCHANGE CAPACITY (mg/kg)	NA	7700	NA	NA	NA

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
ENGINEERING								
PERCENT MOISTURE (%)	NA	NA	10.7	23.3	11SS09	13/13	16.15	16.10
PH (SOLID)	NA	NA	6.4	8	11SS10	12/12	7.62	7.80
TOTAL ORGANIC CARBON (mg/kg)	NA	NA	14000	26000	11SS09	2/2	20000.00	20000.00
CATION EXCHANGE CAPACITY (mg/kg)	NA	NA	3600	7700	11SS09	2/2	5650.00	5650.00

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SB12-02	11SB12-02D	11SB13-02	11SB14-02	11SB15-02	11SB15-03
DATE SAMPLED	11/14/96	11/14/96	11/14/96	11/14/96	11/14/96	11/14/96
DEPTH	2-4'	2-4'	2-4'	2-4'	2-4'	4-6'
VOLATILES (ug/kg)						
CHLOROMETHANE	12 U	12 U	12 U	12 U	12 U	NA
BROMOMETHANE	12 U	12 U	12 U	12 U	12 U	NA
VINYL CHLORIDE	12 U	12 U	12 U	12 U	12 U	NA
CHLOROETHANE	12 U	12 U	12 U	12 U	12 U	NA
METHYLENE CHLORIDE	3 B	12 U	12 U	12 U	12 U	NA
ACETONE	12 U	12 UJ	12 UJ	12 UJ	12 UJ	NA
CARBON DISULFIDE	12 U	12 U	12 U	12 U	12 U	NA
1,1-DICHLOROETHENE	12 U	12 U	12 U	12 U	12 U	NA
1,1-DICHLOROETHANE	12 U	12 U	12 U	12 U	12 U	NA
1,2-DICHLOROETHENE (TOTAL)	12 U	12 U	12 U	12 U	12 U	NA
CHLOROFORM	12 U	12 U	12 U	12 U	12 U	NA
1,2-DICHLOROETHANE	12 U	12 U	12 U	12 U	12 U	NA
2-BUTANONE	12 U	12 U	12 U	12 U	12 U	NA
1,1,1-TRICHLOROETHANE	12 U	12 U	12 U	12 U	12 U	NA
CARBON TETRACHLORIDE	12 U	12 U	12 U	12 U	12 U	NA
BROMODICHLOROMETHANE	12 U	12 U	12 U	12 U	12 U	NA
1,2-DICHLOROPROPANE	12 U	12 U	12 U	12 U	12 U	NA
CIS-1,3-DICHLOROPROPENE	12 U	12 U	12 U	12 U	12 U	NA
TRICHLOROETHENE	12 U	12 U	12 U	12 U	12 U	NA
DIBROMOCHLOROMETHANE	12 U	12 U	12 U	12 U	12 U	NA
1,1,2-TRICHLOROETHANE	12 U	12 U	12 U	12 U	12 U	NA
BENZENE	12 U	12 U	12 U	12 U	12 U	NA
TRANS-1,3-DICHLOROPROPENE	12 U	12 U	12 U	12 U	12 U	NA
BROMOFORM	12 U	12 U	12 U	12 U	12 U	NA
4-METHYL-2-PENTANONE	12 U	12 U	12 U	12 U	12 U	NA
2-HEXANONE	12 U	12 U	12 U	12 U	12 U	NA
TETRACHLOROETHENE	12 U	12 U	12 U	12 U	12 U	NA
1,1,2,2-TETRACHLOROETHANE	12 U	12 U	12 U	12 U	12 U	NA
TOLUENE	12 U	12 U	12 U	12 U	12 U	NA
CHLOROBENZENE	12 U	12 U	12 U	12 U	12 U	NA
ETHYLBENZENE	12 U	12 U	12 U	12 U	12 U	NA
STYRENE	12 U	12 U	12 U	12 U	12 U	NA
XYLENES (TOTAL)	12 U	12 U	12 U	12 U	12 U	NA

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SB12-02	11SB12-02D	11SB13-02	11SB14-02	11SB15-02	11SB15-03
DATE SAMPLED	11/14/96	11/14/96	11/14/96	11/14/96	11/14/96	11/14/96
DEPTH	2-4'	2-4'	2-4'	2-4'	2-4'	4-6'
SEMIVOLATILES (ug/kg)						
PHENOL	390 U	380 U	400 U	400 U	390 U	NA
BIS(2-CHLOROETHYL)ETHER	390 U	380 U	400 U	400 U	390 U	NA
2-CHLOROPHENOL	390 U	380 U	400 U	400 U	390 U	NA
1,3-DICHLOROBENZENE	390 U	380 U	400 U	400 U	390 U	NA
1,4-DICHLOROBENZENE	390 U	380 U	400 U	400 U	390 U	NA
1,2-DICHLOROBENZENE	390 U	380 U	400 U	400 U	390 U	NA
2-METHYLPHENOL	390 U	380 U	400 U	400 U	390 U	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	390 U	380 U	400 U	400 U	390 U	NA
4-METHYLPHENOL	390 U	380 U	400 U	400 U	390 U	NA
HEXACHLOROETHANE	390 U	380 U	400 U	400 U	390 U	NA
NITROBENZENE	390 U	380 U	400 U	400 U	390 U	NA
ISOPHORONE	390 U	380 U	400 U	400 U	390 U	NA
2-NITROPHENOL	390 U	380 U	400 U	400 U	390 U	NA
2,4-DIMETHYLPHENOL	390 U	380 U	400 U	400 U	390 U	NA
BIS(2-CHLOROETHOXY)METHANE	390 U	380 U	400 U	400 U	390 U	NA
2,4-DICHLOROPHENOL	390 U	380 U	400 U	400 U	390 U	NA
1,2,4-TRICHLOROBENZENE	390 U	380 U	400 U	400 U	390 U	NA
NAPHTHALENE	390 U	380 U	400 U	400 U	390 U	NA
4-CHLOROANILINE	390 U	380 U	400 U	400 U	390 U	NA
HEXACHLOROBUTADIENE	390 U	380 U	400 U	400 U	390 U	NA
4-CHLORO-3-METHYLPHENOL	390 U	380 U	400 U	400 U	390 U	NA
2-METHYLNAPHTHALENE	390 U	380 U	400 U	400 U	390 U	NA
HEXACHLOROCYCLOPENTADIENE	390 U	380 U	400 U	400 U	390 U	NA
2,4,6-TRICHLOROPHENOL	390 U	380 U	400 U	400 U	390 U	NA
2,4,5-TRICHLOROPHENOL	940 U	940 U	970 U	960 U	950 U	NA
2-CHLORONAPHTHALENE	390 U	380 U	400 U	400 U	390 U	NA
2-NITROANILINE	940 U	940 U	970 U	960 U	950 U	NA
DIMETHYLPHTHALATE	390 U	380 U	400 U	400 U	390 U	NA
ACENAPHTHYLENE	390 U	380 U	400 U	400 U	390 U	NA
2,6-DINITROTOLUENE	390 U	380 U	400 U	400 U	390 U	NA
3-NITROANILINE	940 U	940 U	970 U	960 U	950 U	NA
ACENAPHTHENE	390 U	380 U	400 U	400 U	390 U	NA
2,4-DINITROPHENOL	940 U	940 U	970 U	960 U	950 U	NA
4-NITROPHENOL	940 U	940 U	970 U	960 U	950 U	NA

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SB12-02	11SB12-02D	11SB13-02	11SB14-02	11SB15-02	11SB15-03
DATE SAMPLED	11/14/96	11/14/96	11/14/96	11/14/96	11/14/96	11/14/96
DEPTH	2-4'	2-4'	2-4'	2-4'	2-4'	4-6'
SEMIVOLATILES (ug/kg) (cont)						
DIBENZOFURAN	390 U	380 U	400 U	400 U	390 U	NA
2,4-DINITROTOLUENE	390 U	380 U	400 U	400 U	390 U	NA
DIETHYLPHTHALATE	390 U	380 U	400 U	400 U	390 U	NA
4-CHLOROPHENYL-PHENYLETHER	390 U	380 U	400 U	400 U	390 U	NA
FLUORENE	390 U	380 U	400 U	400 U	390 U	NA
4-NITROANILINE	940 U	940 U	970 U	960 U	950 U	NA
4,6-DINITRO-2-METHYLPHENOL	940 U	940 U	970 U	960 U	950 U	NA
N-NITROSODIPHENYLAMINE (1)	390 U	380 U	400 U	400 U	390 U	NA
4-BROMOPHENYL-PHENYLETHER	390 U	380 U	400 U	400 U	390 U	NA
HEXACHLOROBENZENE	390 U	380 U	400 U	400 U	390 U	NA
PENTACHLOROPHENOL	940 U	940 U	970 U	960 U	950 U	NA
PHENANTHRENE	390 U	380 U	400 U	400 U	390 U	NA
ANTHRACENE	390 U	380 U	400 U	400 U	390 U	NA
CARBAZOLE	390 U	380 U	400 U	400 U	390 U	NA
DI-N-BUTYLPHTHALATE	390 U	380 U	400 U	400 U	390 U	NA
FLUORANTHENE	390 U	380 U	400 U	400 U	390 U	NA
PYRENE	390 U	380 U	400 U	400 U	390 U	NA
BUTYLBENZYLPHTHALATE	390 U	380 U	400 U	400 U	390 U	NA
3,3'-DICHLOROBENZIDINE	390 U	380 U	400 U	400 U	390 U	NA
BENZO(A)ANTHRACENE	390 U	380 U	400 U	400 U	390 U	NA
CHRYSENE	390 U	380 U	400 U	400 U	390 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	42 J	380 U	400 U	400 U	390 U	NA
DI-N-OCTYLPHTHALATE	390 U	380 U	400 U	400 U	390 U	NA
BENZO(B)FLUORANTHENE	390 U	380 U	400 U	400 U	390 U	NA
BENZO(K)FLUORANTHENE	390 U	380 U	400 U	400 U	390 U	NA
BENZO(A)PYRENE	390 U	380 U	400 U	400 U	390 U	NA
INDENO(1,2,3-CD)PYRENE	390 U	380 U	400 U	400 U	390 U	NA
DIBENZO(A,H)ANTHRACENE	390 U	380 U	400 U	400 U	390 U	NA
BENZO(G,H,I)PERYLENE	390 U	380 U	400 U	400 U	390 U	NA

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SB12-02	11SB12-02D	11SB13-02	11SB14-02	11SB15-02	11SB15-03
DATE SAMPLED	11/14/96	11/14/96	11/14/96	11/14/96	11/14/96	11/14/96
DEPTH	2-4'	2-4'	2-4'	2-4'	2-4'	4-6'
PESTICIDES/PCBS (ug/kg)						
ALPHA-BHC	2 UJ	1.9 UJ	2 U	2 U	2 U	NA
BETA-BHC	2 UJ	1.9 UJ	2 U	2 U	2 U	NA
DELTA-BHC	2 UJ	1.9 UJ	2 U	2 U	2 U	NA
HEPTACHLOR	2 UJ	1.9 UJ	2 U	2 U	2 U	NA
ALDRIN	2 UJ	1.9 UJ	2 U	2 U	2 U	NA
HEPTACHLOR EPOXIDE	2 UJ	1.9 UJ	2 U	2 U	2 U	NA
ENDOSULFAN I	2 UJ	1.9 UJ	2 U	2 U	2 U	NA
DIELDRIN	3.9 UJ	3.9 UJ	4 U	4 U	4 U	NA
4,4'-DDE	3.9 UJ	3.9 UJ	4 U	4 U	4 U	NA
ENDRIN	3.9 UJ	3.9 UJ	4 U	4 U	4 U	NA
ENDOSULFAN II	3.9 UJ	3.9 UJ	4 U	4 U	4 U	NA
4,4'-DDD	3.9 UJ	3.9 UJ	4 U	4 U	4 U	NA
ENDOSULFAN SULFATE	3.9 UJ	3.9 UJ	4 U	4 U	4 U	NA
4,4'-DDT	3.9 UJ	3.9 UJ	4 U	4 U	4 U	NA
METHOXYCHLOR	1.5 J	1.3 J	20 U	20 U	1.1 J	NA
ENDRIN KETONE	3.9 UJ	3.9 UJ	4 U	4 U	4 U	NA
ENDRIN ALDEHYDE	3.9 UJ	3.9 UJ	4 U	4 U	4 U	NA
ALPHA-CHLORDANE	2 UJ	1.9 UJ	2 U	2 U	2 U	NA
GAMMA-CHLORDANE	2 UJ	1.9 UJ	2 U	2 U	2 U	NA
TOXAPHENE	200 UJ	190 UJ	200 U	200 U	200 U	NA
AROCLOR-1016	39 UJ	39 UJ	40 U	40 U	40 U	NA
AROCLOR-1221	78 UJ	78 UJ	81 U	80 U	79 U	NA
AROCLOR-1232	39 UJ	39 UJ	40 U	40 U	40 U	NA
AROCLOR-1242	39 UJ	39 UJ	40 U	40 U	40 U	NA
AROCLOR-1248	39 UJ	39 UJ	40 U	40 U	40 U	NA
AROCLOR-1254	39 UJ	39 UJ	40 U	40 U	40 U	NA
AROCLOR-1260	39 UJ	39 UJ	40 U	40 U	40 U	NA

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SB12-02	11SB12-02D	11SB13-02	11SB14-02	11SB15-02	11SB15-03
DATE SAMPLED	11/14/96	11/14/96	11/14/96	11/14/96	11/14/96	11/14/96
DEPTH	2-4'	2-4'	2-4'	2-4'	2-4'	4-6'
EXPLOSIVES (mg/kg)						
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	NA
2,4-DNT/2,6-DNT	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	NA
2,4,6-TRINITROTOLUENE	0.92	0.76	0.38	0.36	0.25 U	NA
HMX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	NA
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	NA
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	NA
AMINO-DNTS	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	NA
RDX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA
TETRYL	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	NA
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	NA

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SB16-02	11SB17-02	11SB18-02
DATE SAMPLED	11/13/96	11/14/96	11/14/96
DEPTH	2-4'	2-4'	2-4'
VOLATILES (ug/kg)			
CHLOROMETHANE	11 U	11 U	11 U
BROMOMETHANE	11 U	11 U	11 U
VINYL CHLORIDE	11 U	11 U	11 U
CHLOROETHANE	11 U	11 U	11 U
METHYLENE CHLORIDE	11 U	11 U	11 U
ACETONE	12 B	11 UJ	11 UJ
CARBON DISULFIDE	11 U	11 U	11 U
1,1-DICHLOROETHENE	11 U	11 U	11 U
1,1-DICHLOROETHANE	11 U	11 U	11 U
1,2-DICHLOROETHENE (TOTAL)	11 U	11 U	11 U
CHLOROFORM	11 U	11 U	11 U
1,2-DICHLOROETHANE	11 U	11 U	11 U
2-BUTANONE	11 U	11 U	11 U
1,1,1-TRICHLOROETHANE	11 U	11 U	11 U
CARBON TETRACHLORIDE	11 U	11 U	11 U
BROMODICHLOROMETHANE	11 U	11 U	11 U
1,2-DICHLOROPROPANE	11 U	11 U	11 U
CIS-1,3-DICHLOROPROPENE	11 U	11 U	11 U
TRICHLOROETHENE	11 U	11 U	11 U
DIBROMOCHLOROMETHANE	11 U	11 U	11 U
1,1,2-TRICHLOROETHANE	11 U	11 U	11 U
BENZENE	11 U	11 U	11 U
TRANS-1,3-DICHLOROPROPENE	11 U	11 U	11 U
BROMOFORM	11 U	11 U	11 U
4-METHYL-2-PENTANONE	11 U	11 U	11 U
2-HEXANONE	11 U	11 U	11 U
TETRACHLOROETHENE	11 U	11 U	11 U
1,1,2,2-TETRACHLOROETHANE	11 U	11 U	11 U
TOLUENE	11 U	11 U	11 U
CHLOROBENZENE	11 U	11 U	11 U
ETHYLBENZENE	11 U	11 U	11 U
STYRENE	11 U	11 U	11 U
XYLENES (TOTAL)	11 U	11 U	11 U

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SB16-02	11SB17-02	11SB18-02
DATE SAMPLED	11/13/96	11/14/96	11/14/96
DEPTH	2-4'	2-4'	2-4'
SEMIVOLATILES (ug/kg)-			
PHENOL	380 U	380 U	370 U
BIS(2-CHLOROETHYL)ETHER	380 U	380 U	370 U
2-CHLOROPHENOL	380 U	380 U	370 U
1,3-DICHLOROBENZENE	380 U	380 U	370 U
1,4-DICHLOROBENZENE	380 U	380 U	370 U
1,2-DICHLOROBENZENE	380 U	380 U	370 U
2-METHYLPHENOL	380 U	380 U	370 U
2,2'-OXYBIS(1-CHLOROPROPANE)	380 U	380 U	370 U
4-METHYLPHENOL	380 U	380 U	370 U
HEXACHLOROETHANE	380 U	380 U	370 U
NITROBENZENE	380 U	380 U	370 U
ISOPHORONE	380 U	380 U	370 U
2-NITROPHENOL	380 U	380 U	370 U
2,4-DIMETHYLPHENOL	380 U	380 U	370 U
BIS(2-CHLOROETHOXY)METHANE	380 U	380 U	370 U
2,4-DICHLOROPHENOL	380 U	380 U	370 U
1,2,4-TRICHLOROBENZENE	380 U	380 U	370 U
NAPHTHALENE	380 U	380 U	370 U
4-CHLOROANILINE	380 U	380 U	370 U
HEXACHLOROBUTADIENE	380 U	380 U	370 U
4-CHLORO-3-METHYLPHENOL	380 U	380 U	370 U
2-METHYLNAPHTHALENE	380 U	380 U	370 U
HEXACHLOROCYCLOPENTADIENE	380 U	380 U	370 U
2,4,6-TRICHLOROPHENOL	380 U	380 U	370 U
2,4,5-TRICHLOROPHENOL	920 U	910 U	900 U
2-CHLORONAPHTHALENE	380 U	380 U	370 U
2-NITROANILINE	920 U	910 U	900 U
DIMETHYLPHTHALATE	380 U	380 U	370 U
ACENAPHTHYLENE	380 U	380 U	370 U
2,6-DINITROTOLUENE	380 U	380 U	370 U
3-NITROANILINE	920 U	910 U	900 U
ACENAPHTHENE	380 U	380 U	370 U
2,4-DINITROPHENOL	920 U	910 U	900 U
4-NITROPHENOL	920 U	910 U	900 U

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SB16-02	11SB17-02	11SB18-02
DATE SAMPLED	11/13/96	11/14/96	11/14/96
DEPTH	2-4'	2-4'	2-4'
SEMIVOLATILES (ug/kg) (cont)			
DIBENZOFURAN	380 U	380 U	370 U
2,4-DINITROTOLUENE	380 U	380 U	370 U
DIETHYLPHTHALATE	380 U	380 U	370 U
4-CHLOROPHENYL-PHENYLETHER	380 U	380 U	370 U
FLUORENE	380 U	380 U	370 U
4-NITROANILINE	920 U	910 U	900 U
4,6-DINITRO-2-METHYLPHENOL	920 U	910 U	900 U
N-NITROSODIPHENYLAMINE (1)	380 U	380 U	370 U
4-BROMOPHENYL-PHENYLETHER	380 U	380 U	370 U
HEXACHLOROBENZENE	380 U	380 U	370 U
PENTACHLOROPHENOL	920 U	910 U	900 U
PHENANTHRENE	380 U	380 U	370 U
ANTHRACENE	380 U	380 U	370 U
CARBAZOLE	380 U	380 U	370 U
DI-N-BUTYLPHTHALATE	380 U	380 U	370 U
FLUORANTHENE	380 U	380 U	370 U
PYRENE	380 U	380 U	370 U
BUTYLBENZYLPHTHALATE	380 U	380 U	370 U
3,3'-DICHLOROBENZIDINE	380 U	380 U	370 U
BENZO(A)ANTHRACENE	380 U	380 U	370 U
CHRYSENE	380 U	380 U	370 U
BIS(2-ETHYLHEXYL)PHTHALATE	380 U	380 U	370 U
DI-N-OCTYLPHTHALATE	380 U	380 U	370 U
BENZO(B)FLUORANTHENE	380 U	380 U	370 U
BENZO(K)FLUORANTHENE	380 U	380 U	370 U
BENZO(A)PYRENE	380 U	380 U	370 U
INDENO(1,2,3-CD)PYRENE	380 U	380 U	370 U
DIBENZO(A,H)ANTHRACENE	380 U	380 U	370 U
BENZO(G,H,I)PERYLENE	380 U	380 U	370 U

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SB16-02	11SB17-02	11SB18-02
DATE SAMPLED	11/13/96	11/14/96	11/14/96
DEPTH	2-4'	2-4'	2-4'
PESTICIDES/PCBS (ug/kg)			
ALPHA-BHC	1.9 U	18 U	1.9 U
BETA-BHC	1.9 U	18 U	1.9 U
DELTA-BHC	1.9 U	18 U	1.9 U
HEPTACHLOR	1.9 U	18 U	1.9 U
ALDRIN	1.9 U	18 U	1.9 U
HEPTACHLOR EPOXIDE	1.9 U	18 U	1.9 U
ENDOSULFAN I	1.9 U	18 U	1.9 U
DIELDRIN	3.8 U	37 U	3.8 U
4,4'-DDE	3.8 U	37 U	3.8 U
ENDRIN	3.8 U	37 U	3.8 U
ENDOSULFAN II	3.8 U	37 U	3.8 U
4,4'-DDD	3.8 U	37 U	3.8 U
ENDOSULFAN SULFATE	3.8 U	37 U	3.8 U
4,4'-DDT	3.8 U	37 U	1.2 J
METHOXYCHLOR	19 U	18 J	1.1 J
ENDRIN KETONE	3.8 U	37 U	3.8 U
ENDRIN ALDEHYDE	3.8 U	37 U	3.8 U
ALPHA-CHLORDANE	1.9 U	18 U	1.9 U
GAMMA-CHLORDANE	1.9 U	18 U	1.9 U
TOXAPHENE	190 U	1800 U	190 U
AROCLOR-1016	38 U	370 U	38 U
AROCLOR-1221	76 U	740 U	75 U
AROCLOR-1232	38 U	370 U	38 U
AROCLOR-1242	38 U	370 U	38 U
AROCLOR-1248	38 U	370 U	38 U
AROCLOR-1254	38 U	370 U	38 U
AROCLOR-1260	38 U	370 U	38 U

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SB16-02	11SB17-02	11SB18-02
DATE SAMPLED	11/13/96	11/14/96	11/14/96
DEPTH	2-4'	2-4'	2-4'
EXPLOSIVES (mg/kg)			
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U
2,4-DNT/2,6-DNT	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U
HMX	0.5 U	0.5 U	0.5 U
NITROBENZENE	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U
AMINO-DNTS	0.25 U	0.25 U	0.25 U
RDX	0.5 U	0.5 U	0.5 U
TETRYL	0.65 U	0.65 U	0.65 U
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/kg)								
CHLOROMETHANE	11 U	12 U	ND	ND		0/8	NA	NA
BROMOMETHANE	11 U	12 U	ND	ND		0/8	NA	NA
VINYL CHLORIDE	11 U	12 U	ND	ND		0/8	NA	NA
CHLOROETHANE	11 U	12 U	ND	ND		0/8	NA	NA
METHYLENE CHLORIDE	3 B	12 U	ND	ND		0/8	NA	NA
ACETONE	11 UJ	12 U	ND	ND		0/8	NA	NA
CARBON DISULFIDE	11 U	12 U	ND	ND		0/8	NA	NA
1,1-DICHLOROETHENE	11 U	12 U	ND	ND		0/8	NA	NA
1,1-DICHLOROETHANE	11 U	12 U	ND	ND		0/8	NA	NA
1,2-DICHLOROETHENE (TOTAL)	11 U	12 U	ND	ND		0/8	NA	NA
CHLOROFORM	11 U	12 U	ND	ND		0/8	NA	NA
1,2-DICHLOROETHANE	11 U	12 U	ND	ND		0/8	NA	NA
2-BUTANONE	11 U	12 U	ND	ND		0/8	NA	NA
1,1,1-TRICHLOROETHANE	11 U	12 U	ND	ND		0/8	NA	NA
CARBON TETRACHLORIDE	11 U	12 U	ND	ND		0/8	NA	NA
BROMODICHLOROMETHANE	11 U	12 U	ND	ND		0/8	NA	NA
1,2-DICHLOROPROPANE	11 U	12 U	ND	ND		0/8	NA	NA
CIS-1,3-DICHLOROPROPENE	11 U	12 U	ND	ND		0/8	NA	NA
TRICHLOROETHENE	11 U	12 U	ND	ND		0/8	NA	NA
DIBROMOCHLOROMETHANE	11 U	12 U	ND	ND		0/8	NA	NA
1,1,2-TRICHLOROETHANE	11 U	12 U	ND	ND		0/8	NA	NA
BENZENE	11 U	12 U	ND	ND		0/8	NA	NA
TRANS-1,3-DICHLOROPROPENE	11 U	12 U	ND	ND		0/8	NA	NA
BROMOFORM	11 U	12 U	ND	ND		0/8	NA	NA
4-METHYL-2-PENTANONE	11 U	12 U	ND	ND		0/8	NA	NA
2-HEXANONE	11 U	12 U	ND	ND		0/8	NA	NA
TETRACHLOROETHENE	11 U	12 U	ND	ND		0/8	NA	NA
1,1,2,2-TETRACHLOROETHANE	11 U	12 U	ND	ND		0/8	NA	NA
TOLUENE	11 U	12 U	ND	ND		0/8	NA	NA
CHLOROBENZENE	11 U	12 U	ND	ND		0/8	NA	NA
ETHYLBENZENE	11 U	12 U	ND	ND		0/8	NA	NA
STYRENE	11 U	12 U	ND	ND		0/8	NA	NA
XYLENES (TOTAL)	11 U	12 U	ND	ND		0/8	NA	NA

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg)								
PHENOL	370 U	400 U	ND	ND		0/8	NA	NA
BIS(2-CHLOROETHYL)ETHER	370 U	400 U	ND	ND		0/8	NA	NA
2-CHLOROPHENOL	370 U	400 U	ND	ND		0/8	NA	NA
1,3-DICHLOROBENZENE	370 U	400 U	ND	ND		0/8	NA	NA
1,4-DICHLOROBENZENE	370 U	400 U	ND	ND		0/8	NA	NA
1,2-DICHLOROBENZENE	370 U	400 U	ND	ND		0/8	NA	NA
2-METHYLPHENOL	370 U	400 U	ND	ND		0/8	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	370 U	400 U	ND	ND		0/8	NA	NA
4-METHYLPHENOL	370 U	400 U	ND	ND		0/8	NA	NA
HEXACHLOROETHANE	370 U	400 U	ND	ND		0/8	NA	NA
NITROBENZENE	370 U	400 U	ND	ND		0/8	NA	NA
ISOPHORONE	370 U	400 U	ND	ND		0/8	NA	NA
2-NITROPHENOL	370 U	400 U	ND	ND		0/8	NA	NA
2,4-DIMETHYLPHENOL	370 U	400 U	ND	ND		0/8	NA	NA
BIS(2-CHLOROETHOXY)METHANE	370 U	400 U	ND	ND		0/8	NA	NA
2,4-DICHLOROPHENOL	370 U	400 U	ND	ND		0/8	NA	NA
1,2,4-TRICHLOROBENZENE	370 U	400 U	ND	ND		0/8	NA	NA
NAPHTHALENE	370 U	400 U	ND	ND		0/8	NA	NA
4-CHLOROANILINE	370 U	400 U	ND	ND		0/8	NA	NA
HEXACHLOROBUTADIENE	370 U	400 U	ND	ND		0/8	NA	NA
4-CHLORO-3-METHYLPHENOL	370 U	400 U	ND	ND		0/8	NA	NA
2-METHYLNAPHTHALENE	370 U	400 U	ND	ND		0/8	NA	NA
HEXACHLOROCYCLOPENTADIENE	370 U	400 U	ND	ND		0/8	NA	NA
2,4,6-TRICHLOROPHENOL	370 U	400 U	ND	ND		0/8	NA	NA
2,4,5-TRICHLOROPHENOL	900 U	970 U	ND	ND		0/8	NA	NA
2-CHLORONAPHTHALENE	370 U	400 U	ND	ND		0/8	NA	NA
2-NITROANILINE	900 U	970 U	ND	ND		0/8	NA	NA
DIMETHYLPHTHALATE	370 U	400 U	ND	ND		0/8	NA	NA
ACENAPHTHYLENE	370 U	400 U	ND	ND		0/8	NA	NA
2,6-DINITROTOLUENE	370 U	400 U	ND	ND		0/8	NA	NA
3-NITROANILINE	900 U	970 U	ND	ND		0/8	NA	NA
ACENAPHTHENE	370 U	400 U	ND	ND		0/8	NA	NA
2,4-DINITROPHENOL	900 U	970 U	ND	ND		0/8	NA	NA
4-NITROPHENOL	900 U	970 U	ND	ND		0/8	NA	NA

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg) (cont)								
DIBENZOFURAN	370 U	400 U	ND	ND		0/8	NA	NA
2,4-DINITROTOLUENE	370 U	400 U	ND	ND		0/8	NA	NA
DIETHYLPHTHALATE	370 U	400 U	ND	ND		0/8	NA	NA
4-CHLOROPHENYL-PHENYLETHER	370 U	400 U	ND	ND		0/8	NA	NA
FLUORENE	370 U	400 U	ND	ND		0/8	NA	NA
4-NITROANILINE	900 U	970 U	ND	ND		0/8	NA	NA
4,6-DINITRO-2-METHYLPHENOL	900 U	970 U	ND	ND		0/8	NA	NA
N-NITROSODIPHENYLAMINE (1)	370 U	400 U	ND	ND		0/8	NA	NA
4-BROMOPHENYL-PHENYLETHER	370 U	400 U	ND	ND		0/8	NA	NA
HEXACHLOROBENZENE	370 U	400 U	ND	ND		0/8	NA	NA
PENTACHLOROPHENOL	900 U	970 U	ND	ND		0/8	NA	NA
PHENANTHRENE	370 U	400 U	ND	ND		0/8	NA	NA
ANTHRACENE	370 U	400 U	ND	ND		0/8	NA	NA
CARBAZOLE	370 U	400 U	ND	ND		0/8	NA	NA
DI-N-BUTYLPHTHALATE	370 U	400 U	ND	ND		0/8	NA	NA
FLUORANTHENE	370 U	400 U	ND	ND		0/8	NA	NA
PYRENE	370 U	400 U	ND	ND		0/8	NA	NA
BUTYLBENZYLPHTHALATE	370 U	400 U	ND	ND		0/8	NA	NA
3,3'-DICHLOROBENZIDINE	370 U	400 U	ND	ND		0/8	NA	NA
BENZO(A)ANTHRACENE	370 U	400 U	ND	ND		0/8	NA	NA
CHRYSENE	370 U	400 U	ND	ND		0/8	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	370 U	400 U	42 J	42 J	11SB12-02	1/8	42.00	42.00
DI-N-OCTYLPHTHALATE	370 U	400 U	ND	ND		0/8	NA	NA
BENZO(B)FLUORANTHENE	370 U	400 U	ND	ND		0/8	NA	NA
BENZO(K)FLUORANTHENE	370 U	400 U	ND	ND		0/8	NA	NA
BENZO(A)PYRENE	370 U	400 U	ND	ND		0/8	NA	NA
INDENO(1,2,3-CD)PYRENE	370 U	400 U	ND	ND		0/8	NA	NA
DIBENZO(A,H)ANTHRACENE	370 U	400 U	ND	ND		0/8	NA	NA
BENZO(G,H,I)PERYLENE	370 U	400 U	ND	ND		0/8	NA	NA

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDES/PCBS (ug/kg)								
ALPHA-BHC	1.9 UJ	18 U	ND	ND		0/8	NA	NA
BETA-BHC	1.9 UJ	18 U	ND	ND		0/8	NA	NA
DELTA-BHC	1.9 UJ	18 U	ND	ND		0/8	NA	NA
HEPTACHLOR	1.9 UJ	18 U	ND	ND		0/8	NA	NA
ALDRIN	1.9 UJ	18 U	ND	ND		0/8	NA	NA
HEPTACHLOR EPOXIDE	1.9 UJ	18 U	ND	ND		0/8	NA	NA
ENDOSULFAN I	1.9 UJ	18 U	ND	ND		0/8	NA	NA
DIELDRIN	3.8 U	37 U	ND	ND		0/8	NA	NA
4,4'-DDE	3.8 U	37 U	ND	ND		0/8	NA	NA
ENDRIN	3.8 U	37 U	ND	ND		0/8	NA	NA
ENDOSULFAN II	3.8 U	37 U	ND	ND		0/8	NA	NA
4,4'-DDD	3.8 U	37 U	ND	ND		0/8	NA	NA
ENDOSULFAN SULFATE	3.8 U	37 U	ND	ND		0/8	NA	NA
4,4'-DDT	3.8 U	37 U	1.2 J	1.2 J	11SB18-02	1/8	1.20	1.20
METHOXYCHLOR	19 U	20 U	1.1 J	18 J	11SB17-02	5/8	4.60	1.30
ENDRIN KETONE	3.8 U	37 U	ND	ND		0/8	NA	NA
ENDRIN ALDEHYDE	3.8 U	37 U	ND	ND		0/8	NA	NA
ALPHA-CHLORDANE	1.9 UJ	18 U	ND	ND		0/8	NA	NA
GAMMA-CHLORDANE	1.9 UJ	18 U	ND	ND		0/8	NA	NA
TOXAPHENE	190 UJ	1800 U	ND	ND		0/8	NA	NA
AROCLOR-1016	38 U	370 U	ND	ND		0/8	NA	NA
AROCLOR-1221	75 U	740 U	ND	ND		0/8	NA	NA
AROCLOR-1232	38 U	370 U	ND	ND		0/8	NA	NA
AROCLOR-1242	38 U	370 U	ND	ND		0/8	NA	NA
AROCLOR-1248	38 U	370 U	ND	ND		0/8	NA	NA
AROCLOR-1254	38 U	370 U	ND	ND		0/8	NA	NA
AROCLOR-1260	38 U	370 U	ND	ND		0/8	NA	NA

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
EXPLOSIVES (mg/kg)								
1,3-DINITROBENZENE	0.25 U	0.25 U	ND	ND		0/8	NA	NA
2,4-DNT/2,6-DNT	0.25 U	0.25 U	ND	ND		0/8	NA	NA
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.36	0.92	11SB12-02	4/8	0.61	0.57
HMX	0.5 U	0.5 U	ND	ND		0/8	NA	NA
NITROBENZENE	0.25 U	0.25 U	ND	ND		0/8	NA	NA
2-NITROTOLUENE	0.25 U	0.25 U	ND	ND		0/8	NA	NA
3-NITROTOLUENE	0.25 U	0.25 U	ND	ND		0/8	NA	NA
AMINO-DNTS	0.25 U	0.25 U	ND	ND		0/8	NA	NA
RDX	0.5 U	0.5 U	ND	ND		0/8	NA	NA
TETRYL	0.65 U	0.65 U	ND	ND		0/8	NA	NA
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	ND	ND		0/8	NA	NA

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SB12-02	11SB12-02D	11SB13-02	11SB14-02	11SB15-02	11SB15-03
DATE SAMPLED	11/14/96	11/14/96	11/14/96	11/14/96	11/14/96	11/14/96
DEPTH	2-4'	2-4'	2-4'	2-4'	2-4'	4-6'
TOTAL INORGANICS (mg/kg)						
ALUMINUM	2330 J	2460 J	1860 J	2320 J	3270 J	NA
ANTIMONY	0.71 U	0.7 U	0.73 U	0.72 U	0.72 U	NA
ARSENIC	2.2 L	3.5 L	2.4 L	5	3 L	NA
BARIUM	9.1	9	4.6	5.7	9	NA
BERYLLIUM	0.24 U	0.23 U	0.24 U	0.24 U	0.24 U	NA
CADMIUM	0.24 U	0.23 U	0.24 U	0.24 U	0.24 U	NA
CALCIUM	305	359	235	386	269	NA
CHROMIUM	6.4 J	7.2 J	5.5 J	6.1 J	8.3 J	NA
COBALT	0.6	0.87	0.5	0.77	0.89	NA
COPPER	1.2	1.5	0.68	0.73	1.4	NA
IRON	3330 J	5110 J	2900 J	4220 J	4060 J	NA
LEAD	2.1	2.5	1.8	1.9	3.1	NA
MAGNESIUM	262	301	219	372	311	NA
MANGANESE	6.8	8.2	4.8	8.3	9.5	NA
MERCURY	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	NA
NICKEL	1.4	1.6	0.94	1.5	2	NA
POTASSIUM	407	479	394	489	469	NA
SELENIUM	0.71 U	0.8	0.76	0.72 U	0.72 U	NA
SILVER	0.24 U	2.3 U	0.24 U	0.24 U	0.24 U	NA
SODIUM	116 B	123 B	109 B	122 B	107 B	NA
THALLIUM	1.4 U	1.4 U	1.5 U	1.4 U	1.4 U	NA
VANADIUM	5.9	7.6	5.3	6.6	7.6	NA
ZINC	3	3.2	1.7	4.2	3.7	NA
CYANIDE, TOTAL	0.17 U	0.5	0.18 U	0.17 U	0.17 U	NA

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SB16-02	11SB17-02	11SB18-02
DATE SAMPLED	11/13/96	11/14/96	11/14/96
DEPTH	2-4'	2-4'	2-4'
TOTAL INORGANICS (mg/kg)			
ALUMINUM	2130 J	3000 J	2910 J
ANTIMONY	0.69 U	0.69 U	0.68 U
ARSENIC	1.2 L	3 L	3.5 L
BARIUM	6.1	7.3	8.4
BERYLLIUM	0.23 U	0.23 U	0.23 U
CADMIUM	0.23 U	0.23 U	0.23 U
CALCIUM	323	448	329
CHROMIUM	5.2 J	7.9 J	7.6 J
COBALT	0.72	0.8	1.1
COPPER	1.1	1.4	1.5
IRON	2520 J	4420 J	6910 J
LEAD	1.9	3.1	3.4
MAGNESIUM	206	334	293
MANGANESE	5.4	8.8	8.9
MERCURY	0.06 U	0.06 U	0.06 U
NICKEL	1.4	1.8	1.9
POTASSIUM	280	486	438
SELENIUM	0.69 U	0.69 U	0.68 U
SILVER	0.23 U	0.23 U	0.23 U
SODIUM	78.2 B	95.2 B	108 B
THALLIUM	1.4 U	1.4 U	1.4 U
VANADIUM	5	8	8.8
ZINC	2.3	5.6	3.9
CYANIDE, TOTAL	0.4	0.59	0.25

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
TOTAL INORGANICS (mg/kg)								
ALUMINUM	NA	NA	1860 J	3270 J	11SB15-02	8/8	2535.00	2395.00
ANTIMONY	0.68 U	0.73 U	ND	ND		0/8	NA	NA
ARSENIC	NA	NA	1.2 L	5	11SB14-02	8/8	2.98	3.00
BARIUM	NA	NA	4.6	9.1	11SB12-02	8/8	7.40	7.85
BERYLLIUM	0.23 U	0.24 U	ND	ND		0/8	NA	NA
CADMIUM	0.23 U	0.24 U	ND	ND		0/8	NA	NA
CALCIUM	NA	NA	235	448	11SB17-02	8/8	331.75	326.00
CHROMIUM	NA	NA	5.2 J	8.3 J	11SB15-02	8/8	6.78	6.80
COBALT	NA	NA	0.5	1.1	11SB18-02	8/8	0.78	0.79
COPPER	NA	NA	0.68	1.5	11SB18-02	8/8	1.19	1.30
IRON	NA	NA	2520 J	6910 J	11SB18-02	8/8	4183.75	4140.00
LEAD	NA	NA	1.8	3.4	11SB18-02	8/8	2.48	2.30
MAGNESIUM	NA	NA	206	372	11SB14-02	8/8	287.25	297.00
MANGANESE	NA	NA	4.8	9.5	11SB15-02	8/8	7.59	8.25
MERCURY	0.06 U	0.06 U	ND	ND		0/8	NA	NA
NICKEL	NA	NA	0.94	2	11SB15-02	8/8	1.57	1.55
POTASSIUM	NA	NA	280	489	11SB14-02	8/8	430.25	453.50
SELENIUM	0.68 U	0.72 U	0.76	0.8	11SB12-02D	2/8	0.78	0.78
SILVER	0.23 U	2.3 U	ND	ND		0/8	NA	NA
SODIUM	78.2 B	123 B	ND	ND		0/8	NA	NA
THALLIUM	1.4 U	1.5 U	ND	ND		0/8	NA	NA
VANADIUM	NA	NA	5	8.8	11SB18-02	8/8	6.85	7.10
ZINC	NA	NA	1.7	5.6	11SB17-02	8/8	3.45	3.45
CYANIDE, TOTAL	0.17 U	0.18 U	0.25	0.59	11SB17-02	4/8	0.44	0.45

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SB12-02	11SB12-02D	11SB13-02	11SB14-02	11SB15-02	11SB15-03
DATE SAMPLED	11/14/96	11/14/96	11/14/96	11/14/96	11/14/96	11/14/96
DEPTH	2-4'	2-4'	2-4'	2-4'	2-4'	4-6'
ENGINEERING						
PERCENT MOISTURE (%)	15.1	14.5	17.7	16.7	16.1	NA
PERCENT SOLIDS (%)	NA	NA	NA	NA	NA	76.3
NITRATE/NITRITE (mg/kg)	NA	NA	NA	NA	290	320
TOTAL ORGANIC CARBON (mg/kg)	NA	NA	NA	NA	410	530
CATION EXCHANGE CAPACITY (mg/kg)	NA	NA	NA	NA	3500	4900
PH (SOLID)	8.1	7.9	7.2	7.6	6	5.6

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SB16-02	11SB17-02	11SB18-02
DATE SAMPLED	11/13/96	11/14/96	11/14/96
DEPTH	2-4'	2-4'	2-4'
ENGINEERING			
PERCENT MOISTURE (%)	13.2	12.5	11.5
PERCENT SOLIDS (%)	NA	NA	NA
NITRATE/NITRITE (mg/kg)	NA	NA	NA
TOTAL ORGANIC CARBON (mg/kg)	NA	NA	NA
CATION EXCHANGE CAPACITY (mg/kg)	NA	NA	NA
PH (SOLID)	7.7	7.9	7.6

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
ENGINEERING								
PERCENT MOISTURE (%)	NA	NA	11.5	17.7	11SB13-02	8/8	14.66	14.80
PERCENT SOLIDS (%)	NA	NA	76.3	76.3	11SB15-03	1/1	76.30	76.30
NITRATE/NITRITE (mg/kg)	NA	NA	290	320	11SB15-03	2/2	305.00	305.00
TOTAL ORGANIC CARBON (mg/kg)	NA	NA	410	530	11SB15-03	2/2	470.00	470.00
CATION EXCHANGE CAPACITY (mg/kg)	NA	NA	3500	4900	11SB15-03	2/2	4200.00	4200.00
PH (SOLID)	NA	NA	5.6	8.1	11SB12-02	9/9	7.29	7.60

SHALLOW GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11GW03-002	11GW09-003	11GW11-002	11GW11D-002
DATE SAMPLED	11/14/96	11/16/96	11/15/96	11/15/96
VOLATILES (ug/l)				
CHLOROMETHANE	3 J	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U	10 U
CHLOROETHANE	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	10 U	10 U	10 U	10 U
ACETONE	10 U	10 UJ	10 U	10 U
CARBON DISULFIDE	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	10 U	10 U
CHLOROFORM	10 U	10 U	10 U	10 U
1,2-DICHLOROETHANE	10 U	10 U	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U
TRICHLOROETHENE	10 U	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U	10 U
BENZENE	10 U	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U
BROMOFORM	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U	10 U
TOLUENE	10 U	10 U	10 U	10 U
CHLOROBENZENE	10 U	10 U	10 U	10 U
ETHYLBENZENE	10 U	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U	10 U
XYLENES (TOTAL)	10 U	10 U	10 U	10 U

SHALLOW GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11GW03-002	11GW09-003	11GW11-002	11GW11D-002
DATE SAMPLED	11/14/96	11/16/96	11/15/96	11/15/96
SEMIVOLATILES (ug/l)				
PHENOL	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL)ETHER	10 U	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U	10 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U	10 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U	10 U
2-METHYLPHENOL	10 U	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U	10 U
4-METHYLPHENOL	10 U	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 U	10 U	10 U
NITROBENZENE	10 U	10 U	10 U	10 U
ISOPHORONE	10 U	10 U	10 U	10 U
2-NITROPHENOL	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	10 U	10 U
NAPHTHALENE	10 U	10 U	10 U	10 U
4-CHLOROANILINE	10 U	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U	10 U
2-METHYLNAPHTHALENE	10 U	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	25 U	25 U	25 U	25 U
2-CHLORONAPHTHALENE	10 U	10 U	10 U	10 U
2-NITROANILINE	25 U	25 U	25 U	25 U
DIMETHYLPHTHALATE	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 U	10 U	10 U	10 U
3-NITROANILINE	25 U	25 U	25 U	25 U
ACENAPHTHENE	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	25 U	25 U	25 U	25 U
4-NITROPHENOL	25 U	25 U	25 U	25 U
SEMIVOLATILES (ug/l) (cont)				

SHALLOW GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11GW03-002	11GW09-003	11GW11-002	11GW11D-002
DATE SAMPLED	11/14/96	11/16/96	11/15/96	11/15/96
DIBENZOFURAN	10 U	10 U	10 U	10 U
2,4-DINITROTOLUENE	10 U	10 U	10 U	10 U
DIETHYLPHTHALATE	10 U	10 U	10 U	10 U
4-CHLOROPHENYL-PHENYLETHER	10 U	10 U	10 U	10 U
FLUORENE	10 U	10 U	10 U	10 U
4-NITROANILINE	25 U	25 U	25 U	25 U
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	25 U	25 U
N-NITROSODIPHENYLAMINE (1)	10 U	10 U	10 U	10 U
4-BROMOPHENYL-PHENYLETHER	10 U	10 U	10 U	10 U
HEXACHLOROBENZENE	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	25 U	25 U	25 U	25 U
PHENANTHRENE	10 U	10 U	10 U	10 U
ANTHRACENE	10 U	10 U	10 U	10 U
CARBAZOLE	10 U	10 U	10 U	10 U
DI-N-BUTYLPHTHALATE	10 U	10 U	10 U	10 U
FLUORANTHENE	10 U	10 U	10 U	10 U
PYRENE	10 U	10 U	10 U	10 U
BUTYLBENZYLPHTHALATE	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U	10 U
CHRYSENE	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U	10 U
DI-N-OCTYLPHTHALATE	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10 U	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 U	10 U

SHALLOW GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11GW03-002	11GW09-003	11GW11-002	11GW11D-002
DATE SAMPLED	11/14/96	11/16/96	11/15/96	11/15/96
PESTICIDES/PCBS (ug/l)				
ALPHA-BHC	0.05 U	0.05 U	0.05 U	0.05 U
BETA-BHC	0.05 U	0.05 U	0.05 U	0.05 U
DELTA-BHC	0.05 U	0.05 U	0.05 U	0.05 U
GAMMA-BHC (LINDANE)	0.05 U	0.05 U	0.05 U	0.05 U
HEPTACHLOR	0.05 U	0.05 U	0.05 U	0.05 U
ALDRIN	0.05 U	0.033 B	0.05 U	0.05 U
HEPTACHLOR EPOXIDE	0.05 U	0.05 U	0.05 U	0.05 U
ENDOSULFAN I	0.05 U	0.05 U	0.05 U	0.05 U
DIELDRIN	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDE	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN	0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN II	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDD	0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN SULFATE	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDT	0.1 U	0.1 U	0.1 U	0.1 U
METHOXYCHLOR	0.5 U	0.5 U	0.5 U	0.5 U
ENDRIN KETONE	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN ALDEHYDE	0.1 U	0.1 U	0.1 U	0.1 U
ALPHA-CHLORDANE	0.05 U	0.05 U	0.05 U	0.05 U
GAMMA-CHLORDANE	0.05 U	0.05 U	0.05 U	0.05 U
TOXAPHENE	5 U	5 U	5 U	5 U
AROCLOR-1016	1 U	1 U	1 U	1 U
AROCLOR-1221	2 U	2 U	2 U	2 U
AROCLOR-1232	1 U	1 U	1 U	1 U
AROCLOR-1242	1 U	1 U	1 U	1 U
AROCLOR-1248	1 U	1 U	1 U	1 U
AROCLOR-1254	1 U	1 U	1 U	1 U
AROCLOR-1260	1 U	1 U	1 U	1 U

SHALLOW GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11GW03-002	11GW09-003	11GW11-002	11GW11D-002
DATE SAMPLED	11/14/96	11/16/96	11/15/96	11/15/96
EXPLOSIVES (ug/l)				
1,3-DINITROBENZENE	0.2 U	0.2 U	0.4 U	0.2 U
2,4-DNT/2,6-DNT 26	0.2 U	0.2 U	0.4 U	0.5 U
2,4,6-TRINITROTOLUENE	0.2 U	0.2 U	0.4 U	0.2 U
HMX	0.5 U	0.5 U	1 U	0.5 U
NITROBENZENE	0.2 U	0.2 U	0.4 U	0.2 U
2-NITROTOLUENE	0.2 U	0.2 U	0.4 U	0.2 U
3-NITROTOLUENE	0.2 U	0.2 U	0.4 U	0.2 U
AMINO-DNTS	0.2 U	0.2 U	1.1	1.4
RDX	0.5 U	0.5 U	6.2	5.1 J
TETRYL	0.2 U	0.2 U	0.4 U	0.2 U
1,3,5-TRINITROBENZENE	0.2 U	0.2 U	0.4 U	0.2 U

SHALLOW GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/l)								
CHLOROMETHANE	10 U	10 U	3 J	3 J	11GW03-002	1/4	3.00	3.00
BROMOMETHANE	10 U	10 U	ND	ND		0/4	NA	NA
VINYL CHLORIDE	10 U	10 U	ND	ND		0/4	NA	NA
CHLOROETHANE	10 U	10 U	ND	ND		0/4	NA	NA
METHYLENE CHLORIDE	10 U	10 U	ND	ND		0/4	NA	NA
ACETONE	10 U	10 U	ND	ND		0/4	NA	NA
CARBON DISULFIDE	10 U	10 U	ND	ND		0/4	NA	NA
1,1-DICHLOROETHENE	10 U	10 U	ND	ND		0/4	NA	NA
1,1-DICHLOROETHANE	10 U	10 U	ND	ND		0/4	NA	NA
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	ND	ND		0/4	NA	NA
CHLOROFORM	10 U	10 U	ND	ND		0/4	NA	NA
1,2-DICHLOROETHANE	10 U	10 U	ND	ND		0/4	NA	NA
2-BUTANONE	10 U	10 U	ND	ND		0/4	NA	NA
1,1,1-TRICHLOROETHANE	10 U	10 U	ND	ND		0/4	NA	NA
CARBON TETRACHLORIDE	10 U	10 U	ND	ND		0/4	NA	NA
BROMODICHLOROMETHANE	10 U	10 U	ND	ND		0/4	NA	NA
1,2-DICHLOROPROPANE	10 U	10 U	ND	ND		0/4	NA	NA
CIS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/4	NA	NA
TRICHLOROETHENE	10 U	10 U	ND	ND		0/4	NA	NA
DIBROMOCHLOROMETHANE	10 U	10 U	ND	ND		0/4	NA	NA
1,1,2-TRICHLOROETHANE	10 U	10 U	ND	ND		0/4	NA	NA
BENZENE	10 U	10 U	ND	ND		0/4	NA	NA
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/4	NA	NA
BROMOFORM	10 U	10 U	ND	ND		0/4	NA	NA
4-METHYL-2-PENTANONE	10 U	10 U	ND	ND		0/4	NA	NA
2-HEXANONE	10 U	10 U	ND	ND		0/4	NA	NA
TETRACHLOROETHENE	10 U	10 U	ND	ND		0/4	NA	NA
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	ND	ND		0/4	NA	NA
TOLUENE	10 U	10 U	ND	ND		0/4	NA	NA
CHLOROBENZENE	10 U	10 U	ND	ND		0/4	NA	NA
ETHYLBENZENE	10 U	10 U	ND	ND		0/4	NA	NA
STYRENE	10 U	10 U	ND	ND		0/4	NA	NA
XYLENES (TOTAL)	10 U	10 U	ND	ND		0/4	NA	NA

SHALLOW GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/l)								
PHENOL	10 U	10 U	ND	ND		0/4	NA	NA
BIS(2-CHLOROETHYL)ETHER	10 U	10 U	ND	ND		0/4	NA	NA
2-CHLOROPHENOL	10 U	10 U	ND	ND		0/4	NA	NA
1,3-DICHLOROBENZENE	10 U	10 U	ND	ND		0/4	NA	NA
1,4-DICHLOROBENZENE	10 U	10 U	ND	ND		0/4	NA	NA
1,2-DICHLOROBENZENE	10 U	10 U	ND	ND		0/4	NA	NA
2-METHYLPHENOL	10 U	10 U	ND	ND		0/4	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	ND	ND		0/4	NA	NA
4-METHYLPHENOL	10 U	10 U	ND	ND		0/4	NA	NA
HEXACHLOROETHANE	10 U	10 U	ND	ND		0/4	NA	NA
NITROBENZENE	10 U	10 U	ND	ND		0/4	NA	NA
ISOPHORONE	10 U	10 U	ND	ND		0/4	NA	NA
2-NITROPHENOL	10 U	10 U	ND	ND		0/4	NA	NA
2,4-DIMETHYLPHENOL	10 U	10 U	ND	ND		0/4	NA	NA
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	ND	ND		0/4	NA	NA
2,4-DICHLOROPHENOL	10 U	10 U	ND	ND		0/4	NA	NA
1,2,4-TRICHLOROBENZENE	10 U	10 U	ND	ND		0/4	NA	NA
NAPHTHALENE	10 U	10 U	ND	ND		0/4	NA	NA
4-CHLOROANILINE	10 U	10 U	ND	ND		0/4	NA	NA
HEXACHLOROBUTADIENE	10 U	10 U	ND	ND		0/4	NA	NA
4-CHLORO-3-METHYLPHENOL	10 U	10 U	ND	ND		0/4	NA	NA
2-METHYLNAPHTHALENE	10 U	10 U	ND	ND		0/4	NA	NA
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	ND	ND		0/4	NA	NA
2,4,6-TRICHLOROPHENOL	10 U	10 U	ND	ND		0/4	NA	NA
2,4,5-TRICHLOROPHENOL	25 U	25 U	ND	ND		0/4	NA	NA
2-CHLORONAPHTHALENE	10 U	10 U	ND	ND		0/4	NA	NA
2-NITROANILINE	25 U	25 U	ND	ND		0/4	NA	NA
DIMETHYLPHTHALATE	10 U	10 U	ND	ND		0/4	NA	NA
ACENAPHTHYLENE	10 U	10 U	ND	ND		0/4	NA	NA
2,6-DINITROTOLUENE	10 U	10 U	ND	ND		0/4	NA	NA
3-NITROANILINE	25 U	25 U	ND	ND		0/4	NA	NA
ACENAPHTHENE	10 U	10 U	ND	ND		0/4	NA	NA
2,4-DINITROPHENOL	25 U	25 U	ND	ND		0/4	NA	NA
4-NITROPHENOL	25 U	25 U	ND	ND		0/4	NA	NA
SEMIVOLATILES (ug/l) (cont)								

SHALLOW GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
DIBENZOFURAN	10 U	10 U	ND	ND		0/4	NA	NA
2,4-DINITROTOLUENE	10 U	10 U	ND	ND		0/4	NA	NA
DIETHYLPHTHALATE	10 U	10 U	ND	ND		0/4	NA	NA
4-CHLOROPHENYL-PHENYLETHER	10 U	10 U	ND	ND		0/4	NA	NA
FLUORENE	10 U	10 U	ND	ND		0/4	NA	NA
4-NITROANILINE	25 U	25 U	ND	ND		0/4	NA	NA
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	ND	ND		0/4	NA	NA
N-NITROSODIPHENYLAMINE (1)	10 U	10 U	ND	ND		0/4	NA	NA
4-BROMOPHENYL-PHENYLETHER	10 U	10 U	ND	ND		0/4	NA	NA
HEXACHLOROBENZENE	10 U	10 U	ND	ND		0/4	NA	NA
PENTACHLOROPHENOL	25 U	25 U	ND	ND		0/4	NA	NA
PHENANTHRENE	10 U	10 U	ND	ND		0/4	NA	NA
ANTHRACENE	10 U	10 U	ND	ND		0/4	NA	NA
CARBAZOLE	10 U	10 U	ND	ND		0/4	NA	NA
DI-N-BUTYLPHTHALATE	10 U	10 U	ND	ND		0/4	NA	NA
FLUORANTHENE	10 U	10 U	ND	ND		0/4	NA	NA
PYRENE	10 U	10 U	ND	ND		0/4	NA	NA
BUTYLBENZYLPHTHALATE	10 U	10 U	ND	ND		0/4	NA	NA
3,3'-DICHLOROBENZIDINE	10 U	10 U	ND	ND		0/4	NA	NA
BENZO(A)ANTHRACENE	10 U	10 U	ND	ND		0/4	NA	NA
CHRYSENE	10 U	10 U	ND	ND		0/4	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	ND	ND		0/4	NA	NA
DI-N-OCTYLPHTHALATE	10 U	10 U	ND	ND		0/4	NA	NA
BENZO(B)FLUORANTHENE	10 U	10 U	ND	ND		0/4	NA	NA
BENZO(K)FLUORANTHENE	10 U	10 U	ND	ND		0/4	NA	NA
BENZO(A)PYRENE	10 U	10 U	ND	ND		0/4	NA	NA
INDENO(1,2,3-CD)PYRENE	10 U	10 U	ND	ND		0/4	NA	NA
DIBENZO(A,H)ANTHRACENE	10 U	10 U	ND	ND		0/4	NA	NA
BENZO(G,H,I)PERYLENE	10 U	10 U	ND	ND		0/4	NA	NA

SHALLOW GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDES/PCBS (ug/l)								
ALPHA-BHC	0.05 U	0.05 U	ND	ND		0/4	NA	NA
BETA-BHC	0.05 U	0.05 U	ND	ND		0/4	NA	NA
DELTA-BHC	0.05 U	0.05 U	ND	ND		0/4	NA	NA
GAMMA-BHC (LINDANE)	0.05 U	0.05 U	ND	ND		0/4	NA	NA
HEPTACHLOR	0.05 U	0.05 U	ND	ND		0/4	NA	NA
ALDRIN	0.033 B	0.05 U	ND	ND		0/4	NA	NA
HEPTACHLOR EPOXIDE	0.05 U	0.05 U	ND	ND		0/4	NA	NA
ENDOSULFAN I	0.05 U	0.05 U	ND	ND		0/4	NA	NA
DIELDRIN	0.1 U	0.1 U	ND	ND		0/4	NA	NA
4,4'-DDE	0.1 U	0.1 U	ND	ND		0/4	NA	NA
ENDRIN	0.1 U	0.1 U	ND	ND		0/4	NA	NA
ENDOSULFAN II	0.1 U	0.1 U	ND	ND		0/4	NA	NA
4,4'-DDD	0.1 U	0.1 U	ND	ND		0/4	NA	NA
ENDOSULFAN SULFATE	0.1 U	0.1 U	ND	ND		0/4	NA	NA
4,4'-DDT	0.1 U	0.1 U	ND	ND		0/4	NA	NA
METHOXYCHLOR	0.5 U	0.5 U	ND	ND		0/4	NA	NA
ENDRIN KETONE	0.1 U	0.1 U	ND	ND		0/4	NA	NA
ENDRIN ALDEHYDE	0.1 U	0.1 U	ND	ND		0/4	NA	NA
ALPHA-CHLORDANE	0.05 U	0.05 U	ND	ND		0/4	NA	NA
GAMMA-CHLORDANE	0.05 U	0.05 U	ND	ND		0/4	NA	NA
TOXAPHENE	5 U	5 U	ND	ND		0/4	NA	NA
AROCLOR-1016	1 U	1 U	ND	ND		0/4	NA	NA
AROCLOR-1221	2 U	2 U	ND	ND		0/4	NA	NA
AROCLOR-1232	1 U	1 U	ND	ND		0/4	NA	NA
AROCLOR-1242	1 U	1 U	ND	ND		0/4	NA	NA
AROCLOR-1248	1 U	1 U	ND	ND		0/4	NA	NA
AROCLOR-1254	1 U	1 U	ND	ND		0/4	NA	NA
AROCLOR-1260	1 U	1 U	ND	ND		0/4	NA	NA

SHALLOW GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
EXPLOSIVES (ug/l)								
1,3-DINITROBENZENE	0.2 U	0.4 U	ND	ND		0/4	NA	NA
2,4-DNT/2,6-DNT 26	0.2 U	0.5 U	ND	ND		0/4	NA	NA
2,4,6-TRINITROTOLUENE	0.2 U	0.4 U	ND	ND		0/4	NA	NA
HMX	0.5 U	1 U	ND	ND		0/4	NA	NA
NITROBENZENE	0.2 U	0.4 U	ND	ND		0/4	NA	NA
2-NITROTOLUENE	0.2 U	0.4 U	ND	ND		0/4	NA	NA
3-NITROTOLUENE	0.2 U	0.4 U	ND	ND		0/4	NA	NA
AMINO-DNTS	0.2 U	0.2 U	1.1	1.4	11GW11D-002	2/4	1.25	1.25
RDX	0.5 U	0.5 U	5.1 J	6.2	11GW11-002	2/4	5.65	5.65
TETRYL	0.2 U	0.4 U	ND	ND		0/4	NA	NA
1,3,5-TRINITROBENZENE	0.2 U	0.4 U	ND	ND		0/4	NA	NA

SHALLOW GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11GW03-002	11GW09-003	11GW11-002	11GW11D-002
DATE SAMPLED	11/14/96	11/16/96	11/15/96	11/15/96
TOTAL INORGANICS (ug/l)				
ALUMINUM	1390	526	254	151 B
ANTIMONY	3 U	3 U	3 U	3 U
ARSENIC	11.4 B	3 U	3 U	3 U
BARIUM	12.7	73.2	43.7	43.1
BERYLLIUM	1 U	1.1	1 U	1 U
CADMIUM	1 U	1 U	1 U	1 U
CALCIUM	5720	2160	4220	4340
CHROMIUM	1 UL	1 UL	1 UL	1 UL
COBALT	2 U	3.9	4.4	4.4
COPPER	2.9 B	1 U	2.7 B	1 U
IRON	5710	2000	1230	1250
LEAD	2 U	2 U	2 U	2 U
MAGNESIUM	333	970	1210	1290
MANGANESE	10.9	10.4	17.7	18.2
MERCURY	0.1 U	0.1 U	0.1 U	0.1 U
NICKEL	2 U	5.3	10.8	4
POTASSIUM	269 B	240 B	475	524
SELENIUM	3 UL	3 UL	3 UL	3 UL
SILVER	1 U	1 U	1 U	1 UL
SODIUM	2770	5360	3080	3230
THALLIUM	6 U	6 U	6 U	6 U
VANADIUM	2.7	1 U	1 U	1 U
ZINC	15.1 B	15.6 B	12.2 B	8.7 B
CYANIDE, TOTAL	3 U	3 U	3 U	3 U

SHALLOW GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
TOTAL INORGANICS (ug/l)								
ALUMINUM	151 B	151 B	254	1390	11GW03-002	3/4	723.33	526.00
ANTIMONY	3 U	3 U	ND	ND		0/4	NA	NA
ARSENIC	3 U	11.4 B	ND	ND		0/4	NA	NA
BARIUM	NA	NA	12.7	73.2	11GW09-003	4/4	43.18	43.40
BERYLLIUM	1 U	1 U	1.1	1.1	11GW09-003	1/4	1.10	1.10
CADMIUM	1 U	1 U	ND	ND		0/4	NA	NA
CALCIUM	NA	NA	2160	5720	11GW03-002	4/4	4110.00	4280.00
CHROMIUM	1 UL	1 UL	ND	ND		0/4	NA	NA
COBALT	2 U	2 U	3.9	4.4	11GW11D-002	3/4	4.23	4.40
COPPER	1 U	2.9 B	ND	ND		0/4	NA	NA
IRON	NA	NA	1230	5710	11GW03-002	4/4	2547.50	1625.00
LEAD	2 U	2 U	ND	ND		0/4	NA	NA
MAGNESIUM	NA	NA	333	1290	11GW11D-002	4/4	950.75	1090.00
MANGANESE	NA	NA	10.4	18.2	11GW11D-002	4/4	14.30	14.30
MERCURY	0.1 U	0.1 U	ND	ND		0/4	NA	NA
NICKEL	2 U	2 U	4	10.8	11GW11-002	3/4	6.70	5.30
POTASSIUM	240 B	269 B	475	524	11GW11D-002	2/4	499.50	499.50
SELENIUM	3 UL	3 UL	ND	ND		0/4	NA	NA
SILVER	1 U	1 U	ND	ND		0/4	NA	NA
SODIUM	NA	NA	2770	5360	11GW09-003	4/4	3610.00	3155.00
THALLIUM	6 U	6 U	ND	ND		0/4	NA	NA
VANADIUM	1 U	1 U	2.7	2.7	11GW03-002	1/4	2.70	2.70
ZINC	8.7 B	15.6 B	ND	ND		0/4	NA	NA
CYANIDE, TOTAL	3 U	3 U	ND	ND		0/4	NA	NA

SHALLOW GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
DISSOLVED INORGANICS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11GW03-002F	11GW09-003F	11GW11-002F	11GW11D-002F
DATE SAMPLED	11/14/96	11/16/96	11/15/96	11/15/96
DISSOLVED INORGANICS (ug/l)				
ALUMINUM	759	437	136 B	103 B
ANTIMONY	3 U	3 U	3 U	3 U
ARSENIC	8.5 B	3.2 B	3 B	3 U
BARIUM	10	70.1	42.7	43.4
BERYLLIUM	1 U	1 U	1 U	1 U
CADMIUM	1 U	1 U	1 U	1 U
CALCIUM	5230	2230	4490	4540
CHROMIUM	1 UL	1 UL	1 UL	1 UL
COBALT	2 U	4.1	4.4	4.5
COPPER	1 U	1 U	1 U	1 U
IRON	5320	2110	1240	1390
LEAD	2 U	2 U	2 U	2 U
MAGNESIUM	249	992	1490	1350
MANGANESE	9.8	11.2	18	18.5
MERCURY	0.1 U	0.1 U	0.1 U	0.1 U
NICKEL	2 U	4.9	4.6	3.8
POTASSIUM	179 B	249 B	507	532
SELENIUM	3 UL	3 UL	3.3 L	3 U
SILVER	1 U	1 U	1 U	1 UL
SODIUM	1830	5090	3150	3350
THALLIUM	6 U	6 U	6 U	6 U
VANADIUM	1.2	1 U	1 U	1 U
ZINC	6.3 B	17.4 B	9.7 B	12.3 B

SHALLOW GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
DISSOLVED INORGANICS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
DISSOLVED INORGANICS (ug/l)								
ALUMINUM	103 B	136 B	437	759	11GW03-002F	2/4	598.00	598.00
ANTIMONY	3 U	3 U	ND	ND		0/4	NA	NA
ARSENIC	3 B	8.5 B	ND	ND		0/4	NA	NA
BARIUM	NA	NA	10	70.1	11GW09-003F	4/4	41.55	43.05
BERYLLIUM	1 U	1 U	ND	ND		0/4	NA	NA
CADMIUM	1 U	1 U	ND	ND		0/4	NA	NA
CALCIUM	NA	NA	2230	5230	11GW03-002F	4/4	4122.50	4515.00
CHROMIUM	1 UL	1 UL	ND	ND		0/4	NA	NA
COBALT	2 U	2 U	4.1	4.5	11GW11D-002F	3/4	4.33	4.40
COPPER	1 U	1 U	ND	ND		0/4	NA	NA
IRON	NA	NA	1240	5320	11GW03-002F	4/4	2515.00	1750.00
LEAD	2 U	2 U	ND	ND		0/4	NA	NA
MAGNESIUM	NA	NA	249	1490	11GW11-002F	4/4	1020.25	1171.00
MANGANESE	NA	NA	9.8	18.5	11GW11D-002F	4/4	14.38	14.60
MERCURY	0.1 U	0.1 U	ND	ND		0/4	NA	NA
NICKEL	2 U	2 U	3.8	4.9	11GW09-003F	3/4	4.43	4.60
POTASSIUM	179 B	249 B	507	532	11GW11D-002F	2/4	519.50	519.50
SELENIUM	3 UL	3 UL	3.3 L	3.3 L	11GW11-002F	1/4	3.30	3.30
SILVER	1 U	1 U	ND	ND		0/4	NA	NA
SODIUM	NA	NA	1830	5090	11GW09-003F	4/4	3355.00	3250.00
THALLIUM	6 U	6 U	ND	ND		0/4	NA	NA
VANADIUM	1 U	1 U	1.2	1.2	11GW03-002F	1/4	1.20	1.20
ZINC	6.3 B	17.4 B	ND	ND		0/4	NA	NA

SHALLOW GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11GW03-002	11GW09-003	11GW11-002	11GW11D-002
DATE SAMPLED	11/14/96	11/16/96	11/15/96	11/15/96
ENGINEERING (ug/l)				
NITRATE/NITRITE	100 U	100 U	100 U	100 U
TOTAL DISSOLVED SOLIDS	58000	13000	10000 U	NA
TOTAL SUSPENDED SOLIDS	4000 U	4000 U	4000 U	NA
ORTHO-PHOSPHATE	NA	NA	500 U	NA
BROMIDE	NA	NA	500 U	NA
CHLORIDE	NA	NA	5800	NA
SULFATE	NA	NA	12200	NA
PROPANE	NA	NA	0.64 U	NA
METHANE	NA	NA	6	NA
ETHENE	NA	NA	0.4 U	NA
ETHANE	NA	NA	0.4 U	NA

SHALLOW GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
ENGINEERING (ug/l)								
NITRATE/NITRITE	100 U	100 U	ND	ND		0/4	NA	NA
TOTAL DISSOLVED SOLIDS	10000 U	10000 U	13000	58000	11GW03-002	2/3	35500.00	35500.00
TOTAL SUSPENDED SOLIDS	4000 U	4000 U	ND	ND		0/3	NA	NA
ORTHO-PHOSPHATE	500 U	500 U	ND	ND		0/1	NA	NA
BROMIDE	500 U	500 U	ND	ND		0/1	NA	NA
CHLORIDE	NA	NA	5800	5800	11GW11-002	1/1	5800.00	5800.00
SULFATE	NA	NA	12200	12200	11GW11-002	1/1	12200.00	12200.00
PROPANE	0.64 U	0.64 U	ND	ND		0/1	NA	NA
METHANE	NA	NA	6	6	11GW11-002	1/1	6.00	6.00
ETHENE	0.4 U	0.4 U	ND	ND		0/1	NA	NA
ETHANE	0.4 U	0.4 U	ND	ND		0/1	NA	NA

DEEP GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11GW11A-002
DATE SAMPLED	11/16/96
VOLATILES (ug/l)	
CHLOROMETHANE	10 U
BROMOMETHANE	10 U
VINYL CHLORIDE	10 U
CHLOROETHANE	10 U
METHYLENE CHLORIDE	10 U
ACETONE	10 UJ
CARBON DISULFIDE	10 U
1,1-DICHLOROETHENE	10 U
1,1-DICHLOROETHANE	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U
CHLOROFORM	10 U
1,2-DICHLOROETHANE	10 U
2-BUTANONE	10 U
1,1,1-TRICHLOROETHANE	10 U
CARBON TETRACHLORIDE	10 U
BROMODICHLOROMETHANE	10 U
1,2-DICHLOROPROPANE	10 U
CIS-1,3-DICHLOROPROPENE	10 U
TRICHLOROETHENE	10 U
DIBROMOCHLOROMETHANE	10 U
1,1,2-TRICHLOROETHANE	10 U
BENZENE	10 U
TRANS-1,3-DICHLOROPROPENE	10 U
BROMOFORM	10 U
4-METHYL-2-PENTANONE	10 U
2-HEXANONE	10 U
TETRACHLOROETHENE	10 U
1,1,2,2-TETRACHLOROETHANE	10 U
TOLUENE	10 U
CHLOROBENZENE	10 U
ETHYLBENZENE	10 U
STYRENE	10 U
XYLENES (TOTAL)	10 U

DEEP GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11GW11A-002
DATE SAMPLED	11/16/96

SEMIVOLATILES (ug/l)	
PHENOL	10 U
BIS(2-CHLOROETHYL)ETHER	10 U
2-CHLOROPHENOL	10 U
1,3-DICHLOROBENZENE	10 U
1,4-DICHLOROBENZENE	10 U
1,2-DICHLOROBENZENE	10 U
2-METHYLPHENOL	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U
4-METHYLPHENOL	10 U
HEXACHLOROETHANE	10 U
NITROBENZENE	10 U
ISOPHORONE	10 U
2-NITROPHENOL	10 U
2,4-DIMETHYLPHENOL	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U
2,4-DICHLOROPHENOL	10 U
1,2,4-TRICHLOROBENZENE	10 U
NAPHTHALENE	10 U
4-CHLOROANILINE	10 U
HEXACHLOROBUTADIENE	10 U
4-CHLORO-3-METHYLPHENOL	10 U
2-METHYLNAPHTHALENE	10 U
HEXACHLOROCYCLOPENTADIENE	10 U
2,4,6-TRICHLOROPHENOL	10 U
2,4,5-TRICHLOROPHENOL	25 U
2-CHLORONAPHTHALENE	10 U
2-NITROANILINE	25 U
DIMETHYLPHTHALATE	10 U
ACENAPHTHYLENE	10 U
2,6-DINITROTOLUENE	10 U
3-NITROANILINE	25 U
ACENAPHTHENE	10 U
2,4-DINITROPHENOL	25 U
4-NITROPHENOL	25 U

DEEP GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11GW11A-002
DATE SAMPLED	11/16/96

SEMIVOLATILES (ug/l) (cont)	
DIBENZOFURAN	10 U
2,4-DINITROTOLUENE	10 U
DIETHYLPHTHALATE	10 U
4-CHLOROPHENYL-PHENYLETHER	10 U
FLUORENE	10 U
4-NITROANILINE	25 U
4,6-DINITRO-2-METHYLPHENOL	25 U
N-NITROSODIPHENYLAMINE (1)	10 U
4-BROMOPHENYL-PHENYLETHER	10 U
HEXACHLOROBENZENE	10 U
PENTACHLOROPHENOL	25 U
PHENANTHRENE	10 U
ANTHRACENE	10 U
CARBAZOLE	10 U
DI-N-BUTYLPHTHALATE	10 U
FLUORANTHENE	10 U
PYRENE	10 U
BUTYLBENZYLPHTHALATE	10 U
3,3'-DICHLOROBENZIDINE	10 U
BENZO(A)ANTHRACENE	10 U
CHRYSENE	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U
DI-N-OCTYLPHTHALATE	10 U
BENZO(B)FLUORANTHENE	10 U
BENZO(K)FLUORANTHENE	10 U
BENZO(A)PYRENE	10 U
INDENO(1,2,3-CD)PYRENE	10 U
DIBENZO(A,H)ANTHRACENE	10 U
BENZO(G,H,I)PERYLENE	10 U

DEEP GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11GW11A-002
DATE SAMPLED	11/16/96

PESTICIDES/PCBS (ug/l)	
ALPHA-BHC	0.05 UJ
BETA-BHC	0.05 UJ
DELTA-BHC	0.05 UJ
GAMMA-BHC (LINDANE)	0.05 UJ
HEPTACHLOR	0.015 B
ALDRIN	0.021 B
HEPTACHLOR EPOXIDE	0.05 UJ
ENDOSULFAN I	0.05 UJ
DIELDRIN	0.1 UJ
4,4'-DDE	0.1 UJ
ENDRIN	0.1 UJ
ENDOSULFAN II	0.1 UJ
4,4'-DDD	0.1 UJ
ENDOSULFAN SULFATE	0.1 UJ
4,4'-DDT	0.1 UJ
METHOXYCHLOR	0.5 UJ
ENDRIN KETONE	0.1 UJ
ENDRIN ALDEHYDE	0.1 UJ
ALPHA-CHLORDANE	0.05 UJ
GAMMA-CHLORDANE	0.05 UJ
TOXAPHENE	5 UJ
AROCLOR-1016	1 UJ
AROCLOR-1221	2 UJ
AROCLOR-1232	1 UJ
AROCLOR-1242	1 UJ
AROCLOR-1248	1 UJ
AROCLOR-1254	1 UJ
AROCLOR-1260	1 UJ

DEEP GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11GW11A-002
DATE SAMPLED	11/16/96

EXPLOSIVES (ug/l)	
1,3-DINITROBENZENE	2.1 U
2,4-DNT/2,6-DNT 26	2.1 U
2,4,6-TRINITROTOLUENE	2.1 U
HMX	5.2 U
NITROBENZENE	2.1 U
2-NITROTOLUENE	2.1 U
3-NITROTOLUENE	2.1 U
AMINO-DNTS	2.1 U
RDX	5.2 U
TETRYL	2.1 U
1,3,5-TRINITROBENZENE	2.1 U

DEEP GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/l)								
CHLOROMETHANE	10 U	10 U	ND	ND		0/1	NA	NA
BROMOMETHANE	10 U	10 U	ND	ND		0/1	NA	NA
VINYL CHLORIDE	10 U	10 U	ND	ND		0/1	NA	NA
CHLOROETHANE	10 U	10 U	ND	ND		0/1	NA	NA
METHYLENE CHLORIDE	10 U	10 U	ND	ND		0/1	NA	NA
ACETONE	10 UJ	10 UJ	ND	ND		0/1	NA	NA
CARBON DISULFIDE	10 U	10 U	ND	ND		0/1	NA	NA
1,1-DICHLOROETHENE	10 U	10 U	ND	ND		0/1	NA	NA
1,1-DICHLOROETHANE	10 U	10 U	ND	ND		0/1	NA	NA
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	ND	ND		0/1	NA	NA
CHLOROFORM	10 U	10 U	ND	ND		0/1	NA	NA
1,2-DICHLOROETHANE	10 U	10 U	ND	ND		0/1	NA	NA
2-BUTANONE	10 U	10 U	ND	ND		0/1	NA	NA
1,1,1-TRICHLOROETHANE	10 U	10 U	ND	ND		0/1	NA	NA
CARBON TETRACHLORIDE	10 U	10 U	ND	ND		0/1	NA	NA
BROMODICHLOROMETHANE	10 U	10 U	ND	ND		0/1	NA	NA
1,2-DICHLOROPROPANE	10 U	10 U	ND	ND		0/1	NA	NA
CIS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/1	NA	NA
TRICHLOROETHENE	10 U	10 U	ND	ND		0/1	NA	NA
DIBROMOCHLOROMETHANE	10 U	10 U	ND	ND		0/1	NA	NA
1,1,2-TRICHLOROETHANE	10 U	10 U	ND	ND		0/1	NA	NA
BENZENE	10 U	10 U	ND	ND		0/1	NA	NA
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/1	NA	NA
BROMOFORM	10 U	10 U	ND	ND		0/1	NA	NA
4-METHYL-2-PENTANONE	10 U	10 U	ND	ND		0/1	NA	NA
2-HEXANONE	10 U	10 U	ND	ND		0/1	NA	NA
TETRACHLOROETHENE	10 U	10 U	ND	ND		0/1	NA	NA
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	ND	ND		0/1	NA	NA
TOLUENE	10 U	10 U	ND	ND		0/1	NA	NA
CHLOROBENZENE	10 U	10 U	ND	ND		0/1	NA	NA
ETHYLBENZENE	10 U	10 U	ND	ND		0/1	NA	NA
STYRENE	10 U	10 U	ND	ND		0/1	NA	NA
XYLENES (TOTAL)	10 U	10 U	ND	ND		0/1	NA	NA

DEEP GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/l)								
PHENOL	10 U	10 U	ND	ND		0/1	NA	NA
BIS(2-CHLOROETHYL)ETHER	10 U	10 U	ND	ND		0/1	NA	NA
2-CHLOROPHENOL	10 U	10 U	ND	ND		0/1	NA	NA
1,3-DICHLOROBENZENE	10 U	10 U	ND	ND		0/1	NA	NA
1,4-DICHLOROBENZENE	10 U	10 U	ND	ND		0/1	NA	NA
1,2-DICHLOROBENZENE	10 U	10 U	ND	ND		0/1	NA	NA
2-METHYLPHENOL	10 U	10 U	ND	ND		0/1	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	ND	ND		0/1	NA	NA
4-METHYLPHENOL	10 U	10 U	ND	ND		0/1	NA	NA
HEXACHLOROETHANE	10 U	10 U	ND	ND		0/1	NA	NA
NITROBENZENE	10 U	10 U	ND	ND		0/1	NA	NA
ISOPHORONE	10 U	10 U	ND	ND		0/1	NA	NA
2-NITROPHENOL	10 U	10 U	ND	ND		0/1	NA	NA
2,4-DIMETHYLPHENOL	10 U	10 U	ND	ND		0/1	NA	NA
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	ND	ND		0/1	NA	NA
2,4-DICHLOROPHENOL	10 U	10 U	ND	ND		0/1	NA	NA
1,2,4-TRICHLOROBENZENE	10 U	10 U	ND	ND		0/1	NA	NA
NAPHTHALENE	10 U	10 U	ND	ND		0/1	NA	NA
4-CHLOROANILINE	10 U	10 U	ND	ND		0/1	NA	NA
HEXACHLOROBUTADIENE	10 U	10 U	ND	ND		0/1	NA	NA
4-CHLORO-3-METHYLPHENOL	10 U	10 U	ND	ND		0/1	NA	NA
2-METHYLNAPHTHALENE	10 U	10 U	ND	ND		0/1	NA	NA
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	ND	ND		0/1	NA	NA
2,4,6-TRICHLOROPHENOL	10 U	10 U	ND	ND		0/1	NA	NA
2,4,5-TRICHLOROPHENOL	25 U	25 U	ND	ND		0/1	NA	NA
2-CHLORONAPHTHALENE	10 U	10 U	ND	ND		0/1	NA	NA
2-NITROANILINE	25 U	25 U	ND	ND		0/1	NA	NA
DIMETHYLPHTHALATE	10 U	10 U	ND	ND		0/1	NA	NA
ACENAPHTHYLENE	10 U	10 U	ND	ND		0/1	NA	NA
2,6-DINITROTOLUENE	10 U	10 U	ND	ND		0/1	NA	NA
3-NITROANILINE	25 U	25 U	ND	ND		0/1	NA	NA
ACENAPHTHENE	10 U	10 U	ND	ND		0/1	NA	NA
2,4-DINITROPHENOL	25 U	25 U	ND	ND		0/1	NA	NA
4-NITROPHENOL	25 U	25 U	ND	ND		0/1	NA	NA

DEEP GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/l) (cont)								
DIBENZOFURAN	10 U	10 U	ND	ND		0/1	NA	NA
2,4-DINITROTOLUENE	10 U	10 U	ND	ND		0/1	NA	NA
DIETHYLPHTHALATE	10 U	10 U	ND	ND		0/1	NA	NA
4-CHLOROPHENYL-PHENYLETHER	10 U	10 U	ND	ND		0/1	NA	NA
FLUORENE	10 U	10 U	ND	ND		0/1	NA	NA
4-NITROANILINE	25 U	25 U	ND	ND		0/1	NA	NA
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	ND	ND		0/1	NA	NA
N-NITROSODIPHENYLAMINE (1)	10 U	10 U	ND	ND		0/1	NA	NA
4-BROMOPHENYL-PHENYLETHER	10 U	10 U	ND	ND		0/1	NA	NA
HEXACHLOROBENZENE	10 U	10 U	ND	ND		0/1	NA	NA
PENTACHLOROPHENOL	25 U	25 U	ND	ND		0/1	NA	NA
PHENANTHRENE	10 U	10 U	ND	ND		0/1	NA	NA
ANTHRACENE	10 U	10 U	ND	ND		0/1	NA	NA
CARBAZOLE	10 U	10 U	ND	ND		0/1	NA	NA
DI-N-BUTYLPHTHALATE	10 U	10 U	ND	ND		0/1	NA	NA
FLUORANTHENE	10 U	10 U	ND	ND		0/1	NA	NA
PYRENE	10 U	10 U	ND	ND		0/1	NA	NA
BUTYLBENZYLPHTHALATE	10 U	10 U	ND	ND		0/1	NA	NA
3,3'-DICHLOROBENZIDINE	10 U	10 U	ND	ND		0/1	NA	NA
BENZO(A)ANTHRACENE	10 U	10 U	ND	ND		0/1	NA	NA
CHRYSENE	10 U	10 U	ND	ND		0/1	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	ND	ND		0/1	NA	NA
DI-N-OCTYLPHTHALATE	10 U	10 U	ND	ND		0/1	NA	NA
BENZO(B)FLUORANTHENE	10 U	10 U	ND	ND		0/1	NA	NA
BENZO(K)FLUORANTHENE	10 U	10 U	ND	ND		0/1	NA	NA
BENZO(A)PYRENE	10 U	10 U	ND	ND		0/1	NA	NA
INDENO(1,2,3-CD)PYRENE	10 U	10 U	ND	ND		0/1	NA	NA
DIBENZO(A,H)ANTHRACENE	10 U	10 U	ND	ND		0/1	NA	NA
BENZO(G,H,I)PERYLENE	10 U	10 U	ND	ND		0/1	NA	NA

DEEP GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDES/PCBS (ug/l)								
ALPHA-BHC	0.05 UJ	0.05 UJ	ND	ND		0/1	NA	NA
BETA-BHC	0.05 UJ	0.05 UJ	ND	ND		0/1	NA	NA
DELTA-BHC	0.05 UJ	0.05 UJ	ND	ND		0/1	NA	NA
GAMMA-BHC (LINDANE)	0.05 UJ	0.05 UJ	ND	ND		0/1	NA	NA
HEPTACHLOR	0.015 B	0.015 B	ND	ND		0/1	NA	NA
ALDRIN	0.021 B	0.021 B	ND	ND		0/1	NA	NA
HEPTACHLOR EPOXIDE	0.05 UJ	0.05 UJ	ND	ND		0/1	NA	NA
ENDOSULFAN I	0.05 UJ	0.05 UJ	ND	ND		0/1	NA	NA
DIELDRIN	0.1 UJ	0.1 UJ	ND	ND		0/1	NA	NA
4,4'-DDE	0.1 UJ	0.1 UJ	ND	ND		0/1	NA	NA
ENDRIN	0.1 UJ	0.1 UJ	ND	ND		0/1	NA	NA
ENDOSULFAN II	0.1 UJ	0.1 UJ	ND	ND		0/1	NA	NA
4,4'-DDD	0.1 UJ	0.1 UJ	ND	ND		0/1	NA	NA
ENDOSULFAN SULFATE	0.1 UJ	0.1 UJ	ND	ND		0/1	NA	NA
4,4'-DDT	0.1 UJ	0.1 UJ	ND	ND		0/1	NA	NA
METHOXYCHLOR	0.5 UJ	0.5 UJ	ND	ND		0/1	NA	NA
ENDRIN KETONE	0.1 UJ	0.1 UJ	ND	ND		0/1	NA	NA
ENDRIN ALDEHYDE	0.1 UJ	0.1 UJ	ND	ND		0/1	NA	NA
ALPHA-CHLORDANE	0.05 UJ	0.05 UJ	ND	ND		0/1	NA	NA
GAMMA-CHLORDANE	0.05 UJ	0.05 UJ	ND	ND		0/1	NA	NA
TOXAPHENE	5 UJ	5 UJ	ND	ND		0/1	NA	NA
AROCLOR-1016	1 UJ	1 UJ	ND	ND		0/1	NA	NA
AROCLOR-1221	2 UJ	2 UJ	ND	ND		0/1	NA	NA
AROCLOR-1232	1 UJ	1 UJ	ND	ND		0/1	NA	NA
AROCLOR-1242	1 UJ	1 UJ	ND	ND		0/1	NA	NA
AROCLOR-1248	1 UJ	1 UJ	ND	ND		0/1	NA	NA
AROCLOR-1254	1 UJ	1 UJ	ND	ND		0/1	NA	NA
AROCLOR-1260	1 UJ	1 UJ	ND	ND		0/1	NA	NA

DEEP GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
EXPLOSIVES (ug/l)								
1,3-DINITROBENZENE	2.1 U	2.1 U	ND	ND		0/1	NA	NA
2,4-DNT/2,6-DNT 26	2.1 U	2.1 U	ND	ND		0/1	NA	NA
2,4,6-TRINITROTOLUENE	2.1 U	2.1 U	ND	ND		0/1	NA	NA
HMX	5.2 U	5.2 U	ND	ND		0/1	NA	NA
NITROBENZENE	2.1 U	2.1 U	ND	ND		0/1	NA	NA
2-NITROTOLUENE	2.1 U	2.1 U	ND	ND		0/1	NA	NA
3-NITROTOLUENE	2.1 U	2.1 U	ND	ND		0/1	NA	NA
AMINO-DNTS	2.1 U	2.1 U	ND	ND		0/1	NA	NA
RDX	5.2 U	5.2 U	ND	ND		0/1	NA	NA
TETRYL	2.1 U	2.1 U	ND	ND		0/1	NA	NA
1,3,5-TRINITROBENZENE	2.1 U	2.1 U	ND	ND		0/1	NA	NA

DEEP GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11GW11A-002	
DATE SAMPLED	11/16/96	
TOTAL INORGANICS (ug/l)		
ALUMINUM	163000	
ANTIMONY	17	B
ARSENIC	501	
BARIUM	534	
BERYLLIUM	8	
CADMIUM	39.9	
CALCIUM	1070000	
CHROMIUM	782	
COBALT	77.6	
COPPER	5090	
IRON	342000	
LEAD	547	
MAGNESIUM	47900	
MANGANESE	965	
MERCURY	0.18	B
NICKEL	382	
POTASSIUM	50700	
SELENIUM	40.1	
SILVER	1	U
SODIUM	13200	
THALLIUM	16.5	K
VANADIUM	1260	
ZINC	1190	
CYANIDE, TOTAL	3	U

DEEP GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
TOTAL INORGANICS (ug/l)								
ALUMINUM	NA	NA	163000	163000	11GW11A-002	1/1	163000.00	163000.00
ANTIMONY	17 B	17 B	ND	ND		0/1	NA	NA
ARSENIC	NA	NA	501	501	11GW11A-002	1/1	501.00	501.00
BARIUM	NA	NA	534	534	11GW11A-002	1/1	534.00	534.00
BERYLLIUM	NA	NA	8	8	11GW11A-002	1/1	8.00	8.00
CADMIUM	NA	NA	39.9	39.9	11GW11A-002	1/1	39.90	39.90
CALCIUM	NA	NA	1070000	1070000	11GW11A-002	1/1	1070000.00	1070000.00
CHROMIUM	NA	NA	782	782	11GW11A-002	1/1	782.00	782.00
COBALT	NA	NA	77.6	77.6	11GW11A-002	1/1	77.60	77.60
COPPER	NA	NA	5090	5090	11GW11A-002	1/1	5090.00	5090.00
IRON	NA	NA	342000	342000	11GW11A-002	1/1	342000.00	342000.00
LEAD	NA	NA	547	547	11GW11A-002	1/1	547.00	547.00
MAGNESIUM	NA	NA	47900	47900	11GW11A-002	1/1	47900.00	47900.00
MANGANESE	NA	NA	965	965	11GW11A-002	1/1	965.00	965.00
MERCURY	0.18 B	0.18 B	ND	ND		0/1	NA	NA
NICKEL	NA	NA	382	382	11GW11A-002	1/1	382.00	382.00
POTASSIUM	NA	NA	50700	50700	11GW11A-002	1/1	50700.00	50700.00
SELENIUM	NA	NA	40.1	40.1	11GW11A-002	1/1	40.10	40.10
SILVER	1 U	1 U	ND	ND		0/1	NA	NA
SODIUM	NA	NA	13200	13200	11GW11A-002	1/1	13200.00	13200.00
THALLIUM	NA	NA	16.5 K	16.5 K	11GW11A-002	1/1	16.50	16.50
VANADIUM	NA	NA	1260	1260	11GW11A-002	1/1	1260.00	1260.00
ZINC	NA	NA	1190	1190	11GW11A-002	1/1	1190.00	1190.00
CYANIDE, TOTAL	3 U	3 U	ND	ND		0/1	NA	NA

DEEP GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
DISSOLVED INORGANICS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11GW11A-002F	
DATE SAMPLED	11/16/96	
DISSOLVED INORGANICS (ug/l)		
ALUMINUM-DISS	232	
ANTIMONY-DISS	5	B
ARSENIC-DISS	9.9	B
BARIUM-DISS	20.8	
BERYLLIUM-DISS	1	U
CADMIUM-DISS	1	U
CALCIUM-DISS	28800	
CHROMIUM-DISS	1	UL
COBALT-DISS	2	U
COPPER-DISS	2.9	B
IRON-DISS	211	
LEAD-DISS	2	U
MAGNESIUM-DISS	370	
MANGANESE-DISS	3	B
MERCURY-DISS	0.1	U
NICKEL-DISS	2	U
POTASSIUM-DISS	840	
SELENIUM-DISS	3	UL
SILVER-DISS	1	U
SODIUM-DISS	3550	
THALLIUM-DISS	6	U
VANADIUM-DISS	6.2	
ZINC-DISS	12.5	B

DEEP GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
DISSOLVED INORGANICS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
DISSOLVED INORGANICS (ug/l)								
ALUMINUM-DISS	NA	NA	232	232	11GW11A-002F	1/1	232.00	232.00
ANTIMONY-DISS	5 B	5 B	ND	ND		0/1	NA	NA
ARSENIC-DISS	9.9 B	9.9 B	ND	ND		0/1	NA	NA
BARIUM-DISS	NA	NA	20.8	20.8	11GW11A-002F	1/1	20.80	20.80
BERYLLIUM-DISS	1 U	1 U	ND	ND		0/1	NA	NA
CADMIUM-DISS	1 U	1 U	ND	ND		0/1	NA	NA
CALCIUM-DISS	NA	NA	28800	28800	11GW11A-002F	1/1	28800.00	28800.00
CHROMIUM-DISS	1 UL	1 UL	ND	ND		0/1	NA	NA
COBALT-DISS	2 U	2 U	ND	ND		0/1	NA	NA
COPPER-DISS	2.9 B	2.9 B	ND	ND		0/1	NA	NA
IRON-DISS	NA	NA	211	211	11GW11A-002F	1/1	211.00	211.00
LEAD-DISS	2 U	2 U	ND	ND		0/1	NA	NA
MAGNESIUM-DISS	NA	NA	370	370	11GW11A-002F	1/1	370.00	370.00
MANGANESE-DISS	3 B	3 B	ND	ND		0/1	NA	NA
MERCURY-DISS	0.1 U	0.1 U	ND	ND		0/1	NA	NA
NICKEL-DISS	2 U	2 U	ND	ND		0/1	NA	NA
POTASSIUM-DISS	NA	NA	840	840	11GW11A-002F	1/1	840.00	840.00
SELENIUM-DISS	3 UL	3 UL	ND	ND		0/1	NA	NA
SILVER-DISS	1 U	1 U	ND	ND		0/1	NA	NA
SODIUM-DISS	NA	NA	3550	3550	11GW11A-002F	1/1	3550.00	3550.00
THALLIUM-DISS	6 U	6 U	ND	ND		0/1	NA	NA
VANADIUM-DISS	NA	NA	6.2	6.2	11GW11A-002F	1/1	6.20	6.20
ZINC-DISS	12.5 B	12.5 B	ND	ND		0/1	NA	NA

DEEP GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11GW11A-002
DATE SAMPLED	11/16/96
ENGINEERING (ug/l)	
NITRATE/NITRITE	100 U
TOTAL DISSOLVED SOLIDS	610000
TOTAL SUSPENDED SOLIDS	6000000
ORTHO-PHOSPHATE	500 U
BROMIDE	500 U
CHLORIDE	3300
SULFATE	13300
PROPANE	0.64 U
METHANE	8.1
ETHENE	0.4 U
ETHANE	0.4 U

DEEP GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
ENGINEERING (ug/l)								
NITRATE/NITRITE	100 U	100 U	ND	ND		0/1	NA	NA
TOTAL DISSOLVED SOLIDS	NA	NA	610000	610000	11GW11A-002	1/1	610000.00	610000.00
TOTAL SUSPENDED SOLIDS	NA	NA	6000000	6000000	11GW11A-002	1/1	6000000.00	6000000.00
ORTHO-PHOSPHATE	500 U	500 U	ND	ND		0/1	NA	NA
BROMIDE	500 U	500 U	ND	ND		0/1	NA	NA
CHLORIDE	NA	NA	3300	3300	11GW11A-002	1/1	3300.00	3300.00
SULFATE	NA	NA	13300	13300	11GW11A-002	1/1	13300.00	13300.00
PROPANE	0.64 U	0.64 U	ND	ND		0/1	NA	NA
METHANE	NA	NA	8.1	8.1	11GW11A-002	1/1	8.10	8.10
ETHENE	0.4 U	0.4 U	ND	ND		0/1	NA	NA
ETHANE	0.4 U	0.4 U	ND	ND		0/1	NA	NA

SEDIMENT - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SD03-01	11SD03-01D	11SD03-02	11SD04-01	11SD04-02
DATE SAMPLED	11/01/96	11/01/96	11/01/96	11/01/96	11/01/96
DEPTH	0-4"	0-4"	4-8"	0-4"	4-8"
VOLATILES (ug/kg)					
CHLOROMETHANE	13 U	13 U	12 U	12 U	13 U
BROMOMETHANE	13 U	13 U	12 U	12 U	13 U
VINYL CHLORIDE	13 U	13 U	12 U	12 U	13 U
CHLOROETHANE	13 U	13 U	12 U	12 U	13 U
METHYLENE CHLORIDE	4 B	13 U	12 U	3 B	3 B
ACETONE	13 U	13 U	12 U	12 U	13 U
CARBON DISULFIDE	13 U	13 U	12 U	12 U	13 U
1,1-DICHLOROETHENE	13 U	13 U	12 U	12 U	13 U
1,1-DICHLOROETHANE	13 U	13 U	12 U	12 U	13 U
1,2-DICHLOROETHENE (TOTAL)	13 U	13 U	12 U	12 U	13 U
CHLOROFORM	13 U	13 U	12 U	12 U	13 U
1,2-DICHLOROETHANE	13 U	13 U	12 U	12 U	13 U
2-BUTANONE	13 U	13 U	12 U	12 U	13 U
1,1,1-TRICHLOROETHANE	13 U	13 U	12 U	12 U	13 U
CARBON TETRACHLORIDE	13 U	13 U	12 U	12 U	13 U
BROMODICHLOROMETHANE	13 U	13 U	12 U	12 U	13 U
1,2-DICHLOROPROPANE	13 U	13 U	12 U	12 U	13 U
CIS-1,3-DICHLOROPROPENE	13 U	13 U	12 U	12 U	13 U
TRICHLOROETHENE	13 U	13 U	12 U	12 U	13 U
DIBROMOCHLOROMETHANE	13 U	13 U	12 U	12 U	13 U
1,1,2-TRICHLOROETHANE	13 U	13 U	12 U	12 U	13 U
BENZENE	13 U	13 U	12 U	12 U	13 U
TRANS-1,3-DICHLOROPROPENE	13 U	13 U	12 U	12 U	13 U
BROMOFORM	13 U	13 U	12 U	12 U	13 U
4-METHYL-2-PENTANONE	13 U	13 U	12 U	12 U	13 U
2-HEXANONE	13 U	13 U	12 U	12 U	13 U
TETRACHLOROETHENE	13 U	13 U	12 U	12 U	13 U
1,1,2,2-TETRACHLOROETHANE	13 U	13 U	12 U	12 U	13 U
TOLUENE	13 U	13 U	3 J	12 U	13 U
CHLOROBENZENE	13 U	13 U	12 U	12 U	13 U
ETHYLBENZENE	13 U	13 U	12 U	12 U	13 U
STYRENE	13 U	13 U	12 U	12 U	13 U
XYLENES (TOTAL)	13 U	13 U	12 U	12 U	13 U

SEDIMENT - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SD03-01	11SD03-01D	11SD03-02	11SD04-01	11SD04-02
DATE SAMPLED	11/01/96	11/01/96	11/01/96	11/01/96	11/01/96
DEPTH	0-4"	0-4"	4-8"	0-4"	4-8"
SEMIVOLATILES (ug/kg)					
PHENOL	410 U	52 B	390 U	400 U	430 U
BIS(2-CHLOROETHYL)ETHER	410 U	420 U	390 U	400 U	430 U
2-CHLOROPHENOL	410 U	420 U	390 U	400 U	430 U
1,3-DICHLOROBENZENE	410 U	420 U	390 U	400 U	430 U
1,4-DICHLOROBENZENE	410 U	420 U	390 U	400 U	430 U
1,2-DICHLOROBENZENE	410 U	420 U	390 U	400 U	430 U
2-METHYLPHENOL	410 U	420 U	390 U	400 U	430 U
2,2'-OXYBIS(1-CHLOROPROPANE)	410 U	420 U	390 U	400 U	430 U
N-NITROSO-DI-N-PROPYLAMINE	410 U	420 U	390 U	400 U	430 U
4-METHYLPHENOL	410 U	420 U	390 U	400 U	430 U
HEXACHLOROETHANE	410 U	420 U	390 U	400 U	430 U
NITROBENZENE	410 U	420 U	390 U	400 U	430 U
ISOPHORONE	410 U	420 U	390 U	400 U	430 U
2-NITROPHENOL	410 U	420 U	390 U	400 U	430 U
2,4-DIMETHYLPHENOL	410 U	420 U	390 U	400 U	430 U
BIS(2-CHLOROETHOXY)METHANE	410 U	420 U	390 U	400 U	430 U
2,4-DICHLOROPHENOL	410 U	420 U	390 U	400 U	430 U
1,2,4-TRICHLOROBENZENE	410 U	420 U	390 U	400 U	430 U
NAPHTHALENE	410 U	420 U	390 U	400 U	430 U
4-CHLOROANILINE	410 U	420 U	390 U	400 U	430 U
HEXACHLOROBUTADIENE	410 U	420 U	390 U	400 U	430 U
4-CHLORO-3-METHYLPHENOL	410 U	420 U	390 U	400 U	430 U
2-METHYLNAPHTHALENE	410 U	420 U	390 U	400 U	430 U
HEXACHLOROCYCLOPENTADIENE	410 U	420 U	390 U	400 U	430 U
2,4,6-TRICHLOROPHENOL	410 U	420 U	390 U	400 U	430 U
2,4,5-TRICHLOROPHENOL	1000 U	1000 U	940 U	980 U	1000 U
2-CHLORONAPHTHALENE	410 U	420 U	390 U	400 U	430 U
2-NITROANILINE	1000 U	1000 U	940 U	980 U	1000 U
DIMETHYLPHTHALATE	410 U	420 U	390 U	400 U	430 U
ACENAPHTHYLENE	410 U	420 U	390 U	400 U	430 U
2,6-DINITROTOLUENE	410 U	420 U	390 U	400 U	430 U
3-NITROANILINE	1000 U	1000 U	940 U	980 U	1000 U
ACENAPHTHENE	410 U	420 U	390 U	400 U	430 U
2,4-DINITROPHENOL	1000 U	1000 U	940 U	980 U	1000 U

SEDIMENT - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SD03-01	11SD03-01D	11SD03-02	11SD04-01	11SD04-02
DATE SAMPLED	11/01/96	11/01/96	11/01/96	11/01/96	11/01/96
DEPTH	0-4"	0-4"	4-8"	0-4"	4-8"
SEMIVOLATILES (ug/kg) (cont)					
4-NITROPHENOL	1000 U	1000 U	940 U	980 U	1000 U
DIBENZOFURAN	410 U	420 U	390 U	400 U	430 U
2,4-DINITROTOLUENE	410 U	420 U	390 U	400 U	430 U
DIETHYLPHTHALATE	410 U	420 U	390 U	400 U	430 U
4-CHLOROPHENYL-PHENYLETHER	410 U	420 U	390 U	400 U	430 U
FLUORENE	410 U	420 U	390 U	400 U	430 U
4-NITROANILINE	1000 U	1000 U	940 U	980 U	1000 U
4,6-DINITRO-2-METHYLPHENOL	1000 U	1000 U	940 U	980 U	1000 U
N-NITROSODIPHENYLAMINE (1)	410 U	420 U	390 U	400 U	430 U
4-BROMOPHENYL-PHENYLETHER	410 U	420 U	390 U	400 U	430 U
HEXACHLOROBENZENE	410 U	420 U	390 U	400 U	430 U
PENTACHLOROPHENOL	1000 U	1000 U	940 U	980 U	1000 U
PHENANTHRENE	410 U	420 U	390 U	400 U	430 U
ANTHRACENE	410 U	420 U	390 U	400 U	430 U
CARBAZOLE	410 U	420 U	390 U	400 U	430 U
DI-N-BUTYLPHTHALATE	410 U	420 U	390 U	400 U	430 U
FLUORANTHENE	410 U	420 U	390 U	400 U	430 U
PYRENE	410 U	420 U	390 U	400 U	430 U
BUTYLBENZYLPHTHALATE	410 U	420 U	390 U	400 U	430 U
3,3'-DICHLOROBENZIDINE	410 U	420 U	390 U	400 U	430 U
BENZO(A)ANTHRACENE	410 U	420 U	390 U	400 U	430 U
CHRYSENE	410 U	420 U	390 U	400 U	430 U
BIS(2-ETHYLHEXYL)PHTHALATE	410 U	420 U	390 U	120 J	430 U
DI-N-OCTYLPHTHALATE	410 U	420 U	390 U	140 J	430 U
BENZO(B)FLUORANTHENE	410 U	420 U	390 U	400 U	430 U
BENZO(K)FLUORANTHENE	410 U	420 U	390 U	400 U	430 U
BENZO(A)PYRENE	410 U	420 U	390 U	400 U	430 U
INDENO(1,2,3-CD)PYRENE	410 U	420 U	390 U	400 U	430 U
DIBENZO(A,H)ANTHRACENE	410 U	420 U	390 U	400 U	430 U
BENZO(G,H,I)PERYLENE	410 U	420 U	390 U	400 U	430 U

SEDIMENT - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SD03-01	11SD03-01D	11SD03-02	11SD04-01	11SD04-02
DATE SAMPLED	11/01/96	11/01/96	11/01/96	11/01/96	11/01/96
DEPTH	0-4"	0-4"	4-8"	0-4"	4-8"
PESTICIDES/PCBS (ug/kg)					
ALPHA-BHC	2.1 U	11 U	9.8 U	2 U	22 U
BETA-BHC	2.1 U	11 U	9.8 U	2 U	22 U
DELTA-BHC	2.1 U	11 U	9.8 U	2 U	22 U
GAMMA-BHC (LINDANE)	2.1 U	11 U	9.8 U	2 U	22 U
HEPTACHLOR	2.1 U	11 U	9.8 U	2 U	22 U
ALDRIN	2.1 U	11 U	9.8 U	2 U	22 U
HEPTACHLOR EPOXIDE	2.1 U	11 U	9.8 U	2 U	22 U
ENDOSULFAN I	2.1 U	11 U	9.8 U	2 U	22 U
DIELDRIN	4.2 U	21 U	20 U	4.1 U	43 U
4,4'-DDE	4.2 U	21 U	20 U	4.1 U	43 U
ENDRIN	4.2 U	21 U	20 U	4.1 U	43 U
ENDOSULFAN II	4.2 U	21 U	20 U	4.1 U	43 U
4,4'-DDD	4.2 U	21 U	20 U	4.1 U	43 U
ENDOSULFAN SULFATE	4.2 U	21 U	20 U	4.1 U	43 U
4,4'-DDT	0.42 B	21 U	20 U	0.49 B	43 U
METHOXYCHLOR	21 U	110 U	98 U	20 U	220 U
ENDRIN KETONE	4.2 U	21 U	20 U	4.1 U	43 U
ENDRIN ALDEHYDE	4.2 U	21 U	20 U	4.1 U	43 U
ALPHA-CHLORDANE	2.1 U	11 U	9.8 U	2 U	22 U
GAMMA-CHLORDANE	2.1 U	11 U	9.8 U	2 U	22 U
TOXAPHENE	210 U	1100 U	980 U	200 U	2200 U
AROCLOR-1016	42 U	210 U	200 U	41 U	430 U
AROCLOR-1221	84 U	420 U	390 U	81 U	870 U
AROCLOR-1232	42 U	210 U	200 U	41 U	430 U
AROCLOR-1242	42 U	210 U	200 U	41 U	430 U
AROCLOR-1248	42 U	210 U	200 U	41 U	430 U
AROCLOR-1254	42 U	210 U	200 U	41 U	430 U
AROCLOR-1260	42 U	210 U	200 U	41 U	430 U

SEDIMENT - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SD03-01	11SD03-01D	11SD03-02	11SD04-01	11SD04-02
DATE SAMPLED	11/01/96	11/01/96	11/01/96	11/01/96	11/01/96
DEPTH	0-4"	0-4"	4-8"	0-4"	4-8"
EXPLOSIVES (mg/kg)					
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DNT/2,6-DNT	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
AMINO-DNTS	0.5 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRYL	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

SEDIMENT - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID *DATE SAMPLED* DEPTH	*MINIMUM* NONDETECTED	*MAXIMUM* NONDETECTED	*MINIMUM* DETECTED	*MAXIMUM* DETECTED	LOCATION OF *MAXIMUM* DETECTED	FREQUENCY *OF* DETECTION	AVERAGE *OF POSITIVE* DETECTIONS	MEDIAN *OF POSITIVE* DETECTIONS
VOLATILES (ug/kg)								
CHLOROMETHANE	12 U	13 U	ND	ND		0/5	NA	NA
BROMOMETHANE	12 U	13 U	ND	ND		0/5	NA	NA
VINYL CHLORIDE	12 U	13 U	ND	ND		0/5	NA	NA
CHLOROETHANE	12 U	13 U	ND	ND		0/5	NA	NA
METHYLENE CHLORIDE	3 B	13 U	ND	ND		0/5	NA	NA
ACETONE	12 U	13 U	ND	ND		0/5	NA	NA
CARBON DISULFIDE	12 U	13 U	ND	ND		0/5	NA	NA
1,1-DICHLOROETHENE	12 U	13 U	ND	ND		0/5	NA	NA
1,1-DICHLOROETHANE	12 U	13 U	ND	ND		0/5	NA	NA
1,2-DICHLOROETHENE (TOTAL)	12 U	13 U	ND	ND		0/5	NA	NA
CHLOROFORM	12 U	13 U	ND	ND		0/5	NA	NA
1,2-DICHLOROETHANE	12 U	13 U	ND	ND		0/5	NA	NA
2-BUTANONE	12 U	13 U	ND	ND		0/5	NA	NA
1,1,1-TRICHLOROETHANE	12 U	13 U	ND	ND		0/5	NA	NA
CARBON TETRACHLORIDE	12 U	13 U	ND	ND		0/5	NA	NA
BROMODICHLOROMETHANE	12 U	13 U	ND	ND		0/5	NA	NA
1,2-DICHLOROPROPANE	12 U	13 U	ND	ND		0/5	NA	NA
CIS-1,3-DICHLOROPROPENE	12 U	13 U	ND	ND		0/5	NA	NA
TRICHLOROETHENE	12 U	13 U	ND	ND		0/5	NA	NA
DIBROMOCHLOROMETHANE	12 U	13 U	ND	ND		0/5	NA	NA
1,1,2-TRICHLOROETHANE	12 U	13 U	ND	ND		0/5	NA	NA
BENZENE	12 U	13 U	ND	ND		0/5	NA	NA
TRANS-1,3-DICHLOROPROPENE	12 U	13 U	ND	ND		0/5	NA	NA
BROMOFORM	12 U	13 U	ND	ND		0/5	NA	NA
4-METHYL-2-PENTANONE	12 U	13 U	ND	ND		0/5	NA	NA
2-HEXANONE	12 U	13 U	ND	ND		0/5	NA	NA
TETRACHLOROETHENE	12 U	13 U	ND	ND		0/5	NA	NA
1,1,2,2-TETRACHLOROETHANE	12 U	13 U	ND	ND		0/5	NA	NA
TOLUENE	12 U	13 U	3 J	3 J	11SD03-02	1/5	3.00	3.00
CHLOROBENZENE	12 U	13 U	ND	ND		0/5	NA	NA
ETHYLBENZENE	12 U	13 U	ND	ND		0/5	NA	NA
STYRENE	12 U	13 U	ND	ND		0/5	NA	NA
XYLENES (TOTAL)	12 U	13 U	ND	ND		0/5	NA	NA

SEDIMENT - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg)								
PHENOL	52 B	430 U	ND	ND		0/5	NA	NA
BIS(2-CHLOROETHYL)ETHER	390 U	430 U	ND	ND		0/5	NA	NA
2-CHLOROPHENOL	390 U	430 U	ND	ND		0/5	NA	NA
1,3-DICHLOROBENZENE	390 U	430 U	ND	ND		0/5	NA	NA
1,4-DICHLOROBENZENE	390 U	430 U	ND	ND		0/5	NA	NA
1,2-DICHLOROBENZENE	390 U	430 U	ND	ND		0/5	NA	NA
2-METHYLPHENOL	390 U	430 U	ND	ND		0/5	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	390 U	430 U	ND	ND		0/5	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	390 U	430 U	ND	ND		0/5	NA	NA
4-METHYLPHENOL	390 U	430 U	ND	ND		0/5	NA	NA
HEXACHLOROETHANE	390 U	430 U	ND	ND		0/5	NA	NA
NITROBENZENE	390 U	430 U	ND	ND		0/5	NA	NA
ISOPHORONE	390 U	430 U	ND	ND		0/5	NA	NA
2-NITROPHENOL	390 U	430 U	ND	ND		0/5	NA	NA
2,4-DIMETHYLPHENOL	390 U	430 U	ND	ND		0/5	NA	NA
BIS(2-CHLOROETHOXY)METHANE	390 U	430 U	ND	ND		0/5	NA	NA
2,4-DICHLOROPHENOL	390 U	430 U	ND	ND		0/5	NA	NA
1,2,4-TRICHLOROBENZENE	390 U	430 U	ND	ND		0/5	NA	NA
NAPHTHALENE	390 U	430 U	ND	ND		0/5	NA	NA
4-CHLOROANILINE	390 U	430 U	ND	ND		0/5	NA	NA
HEXACHLOROBUTADIENE	390 U	430 U	ND	ND		0/5	NA	NA
4-CHLORO-3-METHYLPHENOL	390 U	430 U	ND	ND		0/5	NA	NA
2-METHYLNAPHTHALENE	390 U	430 U	ND	ND		0/5	NA	NA
HEXACHLOROCYCLOPENTADIENE	390 U	430 U	ND	ND		0/5	NA	NA
2,4,6-TRICHLOROPHENOL	390 U	430 U	ND	ND		0/5	NA	NA
2,4,5-TRICHLOROPHENOL	940 U	1000 U	ND	ND		0/5	NA	NA
2-CHLORONAPHTHALENE	390 U	430 U	ND	ND		0/5	NA	NA
2-NITROANILINE	940 U	1000 U	ND	ND		0/5	NA	NA
DIMETHYLPHTHALATE	390 U	430 U	ND	ND		0/5	NA	NA
ACENAPHTHYLENE	390 U	430 U	ND	ND		0/5	NA	NA
2,6-DINITROTOLUENE	390 U	430 U	ND	ND		0/5	NA	NA
3-NITROANILINE	940 U	1000 U	ND	ND		0/5	NA	NA
ACENAPHTHENE	390 U	430 U	ND	ND		0/5	NA	NA
2,4-DINITROPHENOL	940 U	1000 U	ND	ND		0/5	NA	NA

SEDIMENT - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg) (cont)								
4-NITROPHENOL	940 U	1000 U	ND	ND		0/5	NA	NA
DIBENZOFURAN	390 U	430 U	ND	ND		0/5	NA	NA
2,4-DINITROTOLUENE	390 U	430 U	ND	ND		0/5	NA	NA
DIETHYLPHTHALATE	390 U	430 U	ND	ND		0/5	NA	NA
4-CHLOROPHENYL-PHENYLETHER	390 U	430 U	ND	ND		0/5	NA	NA
FLUORENE	390 U	430 U	ND	ND		0/5	NA	NA
4-NITROANILINE	940 U	1000 U	ND	ND		0/5	NA	NA
4,6-DINITRO-2-METHYLPHENOL	940 U	1000 U	ND	ND		0/5	NA	NA
N-NITROSODIPHENYLAMINE (1)	390 U	430 U	ND	ND		0/5	NA	NA
4-BROMOPHENYL-PHENYLETHER	390 U	430 U	ND	ND		0/5	NA	NA
HEXACHLOROBENZENE	390 U	430 U	ND	ND		0/5	NA	NA
PENTACHLOROPHENOL	940 U	1000 U	ND	ND		0/5	NA	NA
PHENANTHRENE	390 U	430 U	ND	ND		0/5	NA	NA
ANTHRACENE	390 U	430 U	ND	ND		0/5	NA	NA
CARBAZOLE	390 U	430 U	ND	ND		0/5	NA	NA
DI-N-BUTYLPHTHALATE	390 U	430 U	ND	ND		0/5	NA	NA
FLUORANTHENE	390 U	430 U	ND	ND		0/5	NA	NA
PYRENE	390 U	430 U	ND	ND		0/5	NA	NA
BUTYLBENZYLPHTHALATE	390 U	430 U	ND	ND		0/5	NA	NA
3,3'-DICHLOROBENZIDINE	390 U	430 U	ND	ND		0/5	NA	NA
BENZO(A)ANTHRACENE	390 U	430 U	ND	ND		0/5	NA	NA
CHRYSENE	390 U	430 U	ND	ND		0/5	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	390 U	430 U	120 J	120 J	11SD04-01	1/5	120.00	120.00
DI-N-OCTYLPHTHALATE	390 U	430 U	140 J	140 J	11SD04-01	1/5	140.00	140.00
BENZO(B)FLUORANTHENE	390 U	430 U	ND	ND		0/5	NA	NA
BENZO(K)FLUORANTHENE	390 U	430 U	ND	ND		0/5	NA	NA
BENZO(A)PYRENE	390 U	430 U	ND	ND		0/5	NA	NA
INDENO(1,2,3-CD)PYRENE	390 U	430 U	ND	ND		0/5	NA	NA
DIBENZO(A,H)ANTHRACENE	390 U	430 U	ND	ND		0/5	NA	NA
BENZO(G,H,I)PERYLENE	390 U	430 U	ND	ND		0/5	NA	NA

SEDIMENT - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDES/PCBS (ug/kg)								
ALPHA-BHC	2 U	22 U	ND	ND		0/5	NA	NA
BETA-BHC	2 U	22 U	ND	ND		0/5	NA	NA
DELTA-BHC	2 U	22 U	ND	ND		0/5	NA	NA
GAMMA-BHC (LINDANE)	2 U	22 U	ND	ND		0/5	NA	NA
HEPTACHLOR	2 U	22 U	ND	ND		0/5	NA	NA
ALDRIN	2 U	22 U	ND	ND		0/5	NA	NA
HEPTACHLOR EPOXIDE	2 U	22 U	ND	ND		0/5	NA	NA
ENDOSULFAN I	2 U	22 U	ND	ND		0/5	NA	NA
DIELDRIN	4.1 U	43 U	ND	ND		0/5	NA	NA
4,4'-DDE	4.1 U	43 U	ND	ND		0/5	NA	NA
ENDRIN	4.1 U	43 U	ND	ND		0/5	NA	NA
ENDOSULFAN II	4.1 U	43 U	ND	ND		0/5	NA	NA
4,4'-DDD	4.1 U	43 U	ND	ND		0/5	NA	NA
ENDOSULFAN SULFATE	4.1 U	43 U	ND	ND		0/5	NA	NA
4,4'-DDT	0.42 B	43 U	ND	ND		0/5	NA	NA
METHOXYCHLOR	20 U	220 U	ND	ND		0/5	NA	NA
ENDRIN KETONE	4.1 U	43 U	ND	ND		0/5	NA	NA
ENDRIN ALDEHYDE	4.1 U	43 U	ND	ND		0/5	NA	NA
ALPHA-CHLORDANE	2 U	22 U	ND	ND		0/5	NA	NA
GAMMA-CHLORDANE	2 U	22 U	ND	ND		0/5	NA	NA
TOXAPHENE	200 U	2200 U	ND	ND		0/5	NA	NA
AROCLOR-1016	41 U	430 U	ND	ND		0/5	NA	NA
AROCLOR-1221	81 U	870 U	ND	ND		0/5	NA	NA
AROCLOR-1232	41 U	430 U	ND	ND		0/5	NA	NA
AROCLOR-1242	41 U	430 U	ND	ND		0/5	NA	NA
AROCLOR-1248	41 U	430 U	ND	ND		0/5	NA	NA
AROCLOR-1254	41 U	430 U	ND	ND		0/5	NA	NA
AROCLOR-1260	41 U	430 U	ND	ND		0/5	NA	NA

SEDIMENT - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
EXPLOSIVES (mg/kg)								
1,3-DINITROBENZENE	0.25 U	0.25 U	ND	ND		0/5	NA	NA
2,4-DNT/2,6-DNT	0.25 U	0.25 U	ND	ND		0/5	NA	NA
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	ND	ND		0/5	NA	NA
HMX	0.5 U	0.5 U	ND	ND		0/5	NA	NA
NITROBENZENE	0.25 U	0.25 U	ND	ND		0/5	NA	NA
2-NITROTOLUENE	0.25 U	0.25 U	ND	ND		0/5	NA	NA
3-NITROTOLUENE	0.25 U	0.25 U	ND	ND		0/5	NA	NA
AMINO-DNTS	0.25 U	0.5 U	ND	ND		0/5	NA	NA
RDX	0.5 U	0.5 U	ND	ND		0/5	NA	NA
TETRYL	0.65 U	0.65 U	ND	ND		0/5	NA	NA
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	ND	ND		0/5	NA	NA

SEDIMENT - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SD03-01	11SD03-01D	11SD03-02	11SD04-01	11SD04-02
DATE SAMPLED	11/01/96	11/01/96	11/01/96	11/01/96	11/01/96
DEPTH	0-4"	0-4"	4-8"	0-4"	4-8"
TOTAL INORGANICS (mg/kg)					
ALUMINUM	5260	5850	3320	3590	2590
ANTIMONY	0.76 U	0.99 B	0.71 U	0.74 U	0.78 U
ARSENIC	7.2	6.7	2	2	0.94
BARIUM	63.2	62.8	32.1	37.4	26.6
BERYLLIUM	0.25 U	0.26 U	0.24 U	0.25 U	0.26 U
CADMIUM	0.49	0.47	0.24 U	0.25 U	0.26 U
CALCIUM	1850	1820	759	1170	733
CHROMIUM	6.8	7.4	4.4 B	4.8 B	3.4 K
COBALT	4	4.1	1.4	1.1	0.6
COPPER	11.4	11.7	5.7	29.4	13.2
IRON	11800	14900	4560	3020	1670
LEAD	18	17.7	8.2	11.6	10.5
MAGNESIUM	327	369	217	249	176
MANGANESE	129	128	26.7	34.9	19.1
MERCURY	0.08 B	0.07 B	0.06 U	0.06 U	0.06 U
NICKEL	4	4.6	2.6	2.3	1.7
POTASSIUM	215	256	153	207	148
SELENIUM	0.76 U	0.87	0.71 U	0.74 U	0.78 U
SILVER	1.2	1	0.32	0.28	0.26 U
SODIUM	43.1 U	43.8 U	40.4 U	41.9 U	44.3 U
THALLIUM	1.5 U	1.5 U	1.4 U	1.5 U	1.6 U
VANADIUM	13.9	14.6	6.4	7.8	4.9
ZINC	50.8 J	53.9 J	30.6 J	14.5 J	10.3 J
CYANIDE, TOTAL	0.18 U	0.18 U	0.18 B	0.17 U	0.18 U

SEDIMENT - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
TOTAL INORGANICS (mg/kg)								
ALUMINUM	NA	NA	2590	5850	11SD03-01D	5/5	4122.00	3590.00
ANTIMONY	0.71 U	0.99 B	ND	ND		0/5	NA	NA
ARSENIC	NA	NA	0.94	7.2	11SD03-01	5/5	3.77	2.00
BARIUM	NA	NA	26.6	63.2	11SD03-01	5/5	44.42	37.40
BERYLLIUM	0.24 U	0.26 U	ND	ND		0/5	NA	NA
CADMIUM	0.24 U	0.26 U	0.47	0.49	11SD03-01	2/5	0.48	0.48
CALCIUM	NA	NA	733	1850	11SD03-01	5/5	1266.40	1170.00
CHROMIUM	4.4 B	4.8 B	3.4 K	7.4	11SD03-01D	3/5	5.87	6.80
COBALT	NA	NA	0.6	4.1	11SD03-01D	5/5	2.24	1.40
COPPER	NA	NA	5.7	29.4	11SD04-01	5/5	14.28	11.70
IRON	NA	NA	1670	14900	11SD03-01D	5/5	7190.00	4560.00
LEAD	NA	NA	8.2	18	11SD03-01	5/5	13.20	11.60
MAGNESIUM	NA	NA	176	369	11SD03-01D	5/5	267.60	249.00
MANGANESE	NA	NA	19.1	129	11SD03-01	5/5	67.54	34.90
MERCURY	0.06 U	0.08 B	ND	ND		0/5	NA	NA
NICKEL	NA	NA	1.7	4.6	11SD03-01D	5/5	3.04	2.60
POTASSIUM	NA	NA	148	256	11SD03-01D	5/5	195.80	207.00
SELENIUM	0.71 U	0.78 U	0.87	0.87	11SD03-01D	1/5	0.87	0.87
SILVER	0.26 U	0.26 U	0.28	1.2	11SD03-01	4/5	0.70	0.66
SODIUM	40.4 U	44.3 U	ND	ND		0/5	NA	NA
THALLIUM	1.4 U	1.6 U	ND	ND		0/5	NA	NA
VANADIUM	NA	NA	4.9	14.6	11SD03-01D	5/5	9.52	7.80
ZINC	NA	NA	10.3 J	53.9 J	11SD03-01D	5/5	32.02	30.60
CYANIDE, TOTAL	0.17 U	0.18 U	ND	ND		0/5	NA	NA

SEDIMENT - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11SD03-01	11SD03-01D	11SD03-02	11SD04-01	11SD04-02
DATE SAMPLED	11/01/96	11/01/96	11/01/96	11/01/96	11/01/96
DEPTH	0-4"	0-4"	4-8"	0-4"	4-8"
ENGINEERING					
PERCENT MOISTURE (%)	20.7	22	15.3	18.4	22.8
NITRATE/NITRITE (mg/kg)	5 U	NA	6.1	4.9 U	5.2 U
TOTAL ORGANIC CARBON (mg/kg)	20000	NA	8700	16000	10000
CATION EXCHANGE CAPACITY (mg/k	7300	NA	6300	3700	3500
PH (SOLID)	7.1	NA	7	6.6	6.6

SEDIMENT - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
ENGINEERING								
PERCENT MOISTURE (%)	NA	NA	15.3	22.8	11SD04-02	5/5	19.84	20.70
NITRATE/NITRITE (mg/kg)	4.9 U	5.2 U	6.1	6.1	11SD03-02	1/4	6.10	6.10
TOTAL ORGANIC CARBON (mg/kg)	NA	NA	8700	20000	11SD03-01	4/4	13675.00	13000.00
CATION EXCHANGE CAPACITY (mg/k	NA	NA	3500	7300	11SD03-01	4/4	5200.00	5000.00
PH (SOLID)	NA	NA	6.6	7.1	11SD03-01	4/4	6.83	6.80

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS01A	17SS01B	17SS02A	17SS02B	17SS03A	17SS03B	17SS05A	17SS05B
DATE SAMPLED	11/02/96	11/02/96	11/02/96	11/02/96	11/03/96	11/03/96	11/02/96	11/02/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
SEMIVOLATILES (ug/kg)								
PHENOL	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
BIS(2-CHLOROETHYL)ETHER	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
2-CHLOROPHENOL	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
1,3-DICHLOROBENZENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
1,4-DICHLOROBENZENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
1,2-DICHLOROBENZENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
2-METHYLPHENOL	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
2,2'-OXYBIS(1-CHLOROPROPANE)	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
4-METHYLPHENOL	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
HEXACHLOROETHANE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
NITROBENZENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
ISOPHORONE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
2-NITROPHENOL	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
2,4-DIMETHYLPHENOL	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
BIS(2-CHLOROETHOXY)METHANE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
2,4-DICHLOROPHENOL	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
1,2,4-TRICHLOROBENZENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
NAPHTHALENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
4-CHLOROANILINE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
HEXACHLOROBUTADIENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
4-CHLORO-3-METHYLPHENOL	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
2-METHYLNAPHTHALENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
HEXACHLOROCYCLOPENTADIENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
2,4,6-TRICHLOROPHENOL	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
2,4,5-TRICHLOROPHENOL	1200 U	1100 U	980 U	950 U	960 U	910 U	1300 U	930 U
2-CHLORONAPHTHALENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
2-NITROANILINE	1200 U	1100 U	980 U	950 U	960 U	910 U	1300 U	930 U
DIMETHYLPHTHALATE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
ACENAPHTHYLENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
2,6-DINITROTOLUENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
3-NITROANILINE	1200 U	1100 U	980 U	950 U	960 U	910 U	1300 U	930 U
ACENAPHTHENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
2,4-DINITROPHENOL	1200 U	1100 U	980 U	950 U	960 U	910 U	1300 U	930 U
4-NITROPHENOL	1200 U	1100 U	980 U	950 U	960 U	910 U	1300 U	930 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS01A	17SS01B	17SS02A	17SS02B	17SS03A	17SS03B	17SS05A	17SS05B
DATE SAMPLED	11/02/96	11/02/96	11/02/96	11/02/96	11/03/96	11/03/96	11/02/96	11/02/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
SEMIVOLATILES (ug/kg)(cont)								
DIBENZOFURAN	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
2,4-DINITROTOLUENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
DIETHYLPHTHALATE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
4-CHLOROPHENYL-PHENYLETHER	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
FLUORENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
4-NITROANILINE	1200 U	1100 U	980 U	950 U	960 U	910 U	1300 U	930 U
4,6-DINITRO-2-METHYLPHENOL	1200 U	1100 U	980 U	950 U	960 U	910 U	1300 U	930 U
N-NITROSODIPHENYLAMINE (1)	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
4-BROMOPHENYL-PHENYLETHER	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
HEXACHLOROBENZENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
PENTACHLOROPHENOL	1200 U	1100 U	980 U	950 U	960 U	910 U	1300 U	930 U
PHENANTHRENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
ANTHRACENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
CARBAZOLE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
DI-N-BUTYLPHTHALATE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
FLUORANTHENE	510 U	450 U	400 U	390 U	46 J	54 J	520 U	380 U
PYRENE	510 U	450 U	400 U	390 U	55 J	59 J	520 U	380 U
BUTYLBENZYLPHTHALATE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
3,3'-DICHLOROBENZIDINE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
BENZO(A)ANTHRACENE	510 U	450 U	400 U	390 U	45 J	370 U	520 U	380 U
CHRYSENE	510 U	450 U	400 U	390 U	61 J	63 J	520 U	380 U
BIS(2-ETHYLHEXYL)PHTHALATE	510 U	450 U	400 U	46 J	400 U	370 U	520 U	380 U
DI-N-OCTYLPHTHALATE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
BENZO(B)FLUORANTHENE	510 U	450 U	400 U	390 U	92 J	72 J	520 U	380 U
BENZO(K)FLUORANTHENE	510 U	450 U	400 U	390 U	42 J	41 J	520 U	380 U
BENZO(A)PYRENE	510 U	450 U	400 U	390 U	71 J	370 U	520 U	380 U
INDENO(1,2,3-CD)PYRENE	510 U	450 U	400 U	390 U	54 J	370 U	520 U	380 U
DIBENZO(A,H)ANTHRACENE	510 U	450 U	400 U	390 U	400 U	370 U	520 U	380 U
BENZO(G,H,I)PERYLENE	510 U	450 U	400 U	390 U	57 J	370 U	520 U	380 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS01A	17SS01B	17SS02A	17SS02B	17SS03A	17SS03B	17SS05A	17SS05B
DATE SAMPLED	11/02/96	11/02/96	11/02/96	11/02/96	11/03/96	11/03/96	11/02/96	11/02/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
PESTICIDES/PCBS (ug/kg)								
ALPHA-BHC	2.6 U	2.1 UL	2.1 U	2 U	2 U	1.9 U	2.6 U	1.9 U
BETA-BHC	2.6 U	2.1 UL	2.1 U	2 U	2 U	1.9 U	2.6 U	1.9 U
DELTA-BHC	2.6 U	2.1 UL	2.1 U	2 U	2 U	1.9 U	2.6 U	1.9 U
HEPTACHLOR	2.6 U	2.1 UL	2.1 U	2 U	2 U	1.9 U	2.6 U	1.9 U
ALDRIN	2.6 U	2.1 UL	2.1 U	2 U	2 U	1.9 U	2.6 U	1.9 U
HEPTACHLOR EPOXIDE	2.6 U	2.1 UL	2.1 U	2 U	2 U	1.9 U	2.6 U	1.9 U
ENDOSULFAN I	2.6 U	2.1 UL	2.1 U	2 U	2 U	1.9 U	2.6 U	1.9 U
DIELDRIN	5.2 U	4.2 UL	4.1 U	4 U	4 U	3.8 U	5.2 U	3.9 U
4,4'-DDE	5.2 U	4.2 UL	4.1 U	4 U	4 U	3.8 U	0.63 J	0.43 J
ENDRIN	1.1 J	4.2 UL	4.1 U	4 U	4 U	3.8 U	5.2 U	3.9 U
ENDOSULFAN II	5.2 U	4.2 UL	4.1 U	4 U	4 U	3.8 U	5.2 U	3.9 U
4,4'-DDD	5.2 U	4.2 UL	4.1 U	4 U	4 U	3.8 U	5.2 U	3.9 U
ENDOSULFAN SULFATE	5.2 U	4.2 UL	4.1 U	4 U	4 U	3.8 U	5.2 U	3.9 U
4,4'-DDT	0.41 J	4.2 UL	0.13 J	4 U	0.56 J	0.49 J	0.94 J	0.49 J
METHOXYCHLOR	1.5 J	21 UL	0.8 J	20 U	20 U	19 U	26 U	19 U
ENDRIN KETONE	5.2 U	4.2 UL	4.1 U	4 U	4 U	3.8 U	5.2 U	3.9 U
ENDRIN ALDEHYDE	5.2 U	4.2 UL	4.1 U	4 U	4 U	3.8 U	5.2 U	3.9 U
ALPHA-CHLORDANE	2.6 U	2.1 UL	2.1 U	0.24 J	2 U	1.9 U	2.6 U	1.9 U
GAMMA-CHLORDANE	2.6 U	2.1 UL	2.1 U	2 U	2 U	1.9 U	2.6 U	1.9 U
TOXAPHENE	260 U	210 UL	210 U	200 U	200 U	190 U	260 U	190 U
AROCLOR-1016	52 U	42 UL	41 U	40 U	40 U	38 U	52 U	39 U
AROCLOR-1221	100 U	84 UL	83 U	79 U	80 U	76 U	100 U	77 U
AROCLOR-1232	52 U	42 UL	41 U	40 U	40 U	38 U	52 U	39 U
AROCLOR-1242	52 U	42 UL	41 U	40 U	40 U	38 U	52 U	39 U
AROCLOR-1248	52 U	42 UL	41 U	40 U	40 U	38 U	52 U	39 U
AROCLOR-1254	52 U	42 UL	41 U	40 U	40 U	38 U	52 U	39 U
AROCLOR-1260	52 U	42 UL	41 U	40 U	40 U	38 U	52 U	39 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS01A	17SS01B	17SS02A	17SS02B	17SS03A	17SS03B	17SS05A	17SS05B
DATE SAMPLED	11/02/96	11/02/96	11/02/96	11/02/96	11/03/96	11/03/96	11/02/96	11/02/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
EXPLOSIVES (mg/kg)								
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DNT/2,6-DNT 26	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
AMINO-DNTS	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRYL	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS06A	17SS06B	17SS07A	17SS07B	17SS08	17SS08D	17SS09	17SS10
DATE SAMPLED	11/03/96	11/03/96	11/02/96	11/02/96	11/03/96	11/03/96	11/03/96	11/03/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
SEMIVOLATILES (ug/kg)								
PHENOL	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
BIS(2-CHLOROETHYL)ETHER	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
2-CHLOROPHENOL	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
1,3-DICHLOROBENZENE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
1,4-DICHLOROBENZENE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
1,2-DICHLOROBENZENE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
2-METHYLPHENOL	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
2,2'-OXYBIS(1-CHLOROPROPANE)	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
4-METHYLPHENOL	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
HEXACHLOROETHANE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
NITROBENZENE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
ISOPHORONE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
2-NITROPHENOL	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
2,4-DIMETHYLPHENOL	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
BIS(2-CHLOROETHOXY)METHANE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
2,4-DICHLOROPHENOL	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
1,2,4-TRICHLOROBENZENE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
NAPHTHALENE	370 U	350 U	380 U	340 U	390 J	400 U	54 J	1600 U
4-CHLOROANILINE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
HEXACHLOROBUTADIENE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
4-CHLORO-3-METHYLPHENOL	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
2-METHYLNAPHTHALENE	370 U	350 U	380 U	340 U	94 J	400 U	390 U	1600 U
HEXACHLOROCYCLOPENTADIENE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
2,4,6-TRICHLOROPHENOL	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
2,4,5-TRICHLOROPHENOL	900 U	850 U	910 U	830 U	1900 U	980 U	950 U	3900 U
2-CHLORONAPHTHALENE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
2-NITROANILINE	900 U	850 U	910 U	830 U	1900 U	980 U	950 U	3900 U
DIMETHYLPHTHALATE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
ACENAPHTHYLENE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	2800
2,6-DINITROTOLUENE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
3-NITROANILINE	900 U	850 U	910 U	830 U	1900 U	980 U	950 U	3900 U
ACENAPHTHENE	370 U	350 U	380 U	340 U	430 J	400 U	51 J	190 J
2,4-DINITROPHENOL	900 U	850 U	910 U	830 U	1900 U	980 U	950 U	3900 U
4-NITROPHENOL	900 U	850 U	910 U	830 U	1900 U	980 U	950 U	3900 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS06A	17SS06B	17SS07A	17SS07B	17SS08	17SS08D	17SS09	17SS10
DATE SAMPLED	11/03/96	11/03/96	11/02/96	11/02/96	11/03/96	11/03/96	11/03/96	11/03/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
SEMIVOLATILES (ug/kg)(cont)								
DIBENZOFURAN	370 U	350 U	380 U	340 U	380 J	400 U	43 J	1600 U
2,4-DINITROTOLUENE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
DIETHYLPHTHALATE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
4-CHLOROPHENYL-PHENYLETHER	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
FLUORENE	370 U	350 U	380 U	340 U	510 J	400 U	52 J	390 J
4-NITROANILINE	900 U	850 U	910 U	830 U	1900 U	980 U	950 U	3900 U
4,6-DINITRO-2-METHYLPHENOL	900 U	850 U	910 U	830 U	1900 U	980 U	950 U	3900 U
N-NITROSODIPHENYLAMINE (1)	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
4-BROMOPHENYL-PHENYLETHER	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
HEXACHLOROBENZENE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
PENTACHLOROPHENOL	900 U	850 U	910 U	830 U	1900 U	980 U	950 U	3900 U
PHENANTHRENE	370 U	350 U	290 J	340 U	4400 J	220 J	640	2300
ANTHRACENE	370 U	350 U	380 U	340 U	810 J	400 U	98 J	1100 J
CARBAZOLE	370 U	350 U	23 J	340 U	540 J	400 U	65 J	170 J
DI-N-BUTYLPHTHALATE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
FLUORANTHENE	370 U	350 U	280 J	340 U	3900 J	310 J	550	5900
PYRENE	370 U	350 U	260 J	340 U	2600 J	270 J	460	9500
BUTYLBENZYLPHTHALATE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
3,3'-DICHLOROBENZIDINE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
BENZO(A)ANTHRACENE	370 U	350 U	380 U	340 U	1300 J	160 J	260 J	6500
CHRYSENE	370 U	350 U	140 J	39 J	1600 J	180 J	300 J	7600
BIS(2-ETHYLHEXYL)PHTHALATE	370 U	48 J	380 U	340 U	790 U	400 U	390 U	170 J
DI-N-OCTYLPHTHALATE	370 U	350 U	380 U	340 U	790 U	400 U	390 U	1600 U
BENZO(B)FLUORANTHENE	370 U	350 U	120 J	340 U	1500 J	190 J	290 J	8500
BENZO(K)FLUORANTHENE	370 U	350 U	58 J	340 U	520 J	94 J	140 J	3000
BENZO(A)PYRENE	370 U	350 U	380 U	340 U	1000 J	140 J	200 J	9500
INDENO(1,2,3-CD)PYRENE	370 U	350 U	380 U	340 U	460 J	87 J	100 J	4300
DIBENZO(A,H)ANTHRACENE	370 U	350 U	380 U	340 U	160 J	400 U	390 U	1700
BENZO(G,H,I)PERYLENE	370 U	350 U	380 U	340 U	460 J	87 J	100 J	5000

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS06A	17SS06B	17SS07A	17SS07B	17SS08	17SS08D	17SS09	17SS10
DATE SAMPLED	11/03/96	11/03/96	11/02/96	11/02/96	11/03/96	11/03/96	11/03/96	11/03/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
PESTICIDES/PCBS (ug/kg)								
ALPHA-BHC	1.9 U	1.8 U	1.9 U	1.7 U	2 UL	2 U	2 U	41 U
BETA-BHC	1.9 U	1.8 U	1.9 U	1.7 U	2 UL	2 U	2 U	41 U
DELTA-BHC	1.9 U	1.8 U	1.9 U	1.7 U	2 UL	2 U	2 U	41 U
HEPTACHLOR	1.9 U	1.8 U	1.9 U	1.7 U	2 UL	2 U	2 U	41 U
ALDRIN	1.9 U	1.8 U	1.9 U	1.7 U	2 UL	2 U	2 U	41 U
HEPTACHLOR EPOXIDE	1.9 U	1.8 U	1.9 U	1.7 U	2 UL	2 U	2 U	41 U
ENDOSULFAN I	1.9 U	1.8 U	1.9 U	1.7 U	2 UL	2 U	2 U	41 U
DIELDRIN	0.24 J	3.5 U	3.8 U	3.4 U	4 UL	4.1 U	4 U	82 U
4,4'-DDE	0.72 J	0.37 J	3.8 U	3.4 U	4 UL	0.34 J	4 U	82 U
ENDRIN	3.8 U	3.5 U	3.8 U	3.4 U	4 UL	4.1 U	4 U	82 U
ENDOSULFAN II	3.8 U	3.5 U	3.8 U	3.4 U	4 UL	4.1 U	4 U	82 U
4,4'-DDD	3.8 U	3.5 U	3.8 U	3.4 U	4 UL	4.1 U	4 U	82 U
ENDOSULFAN SULFATE	3.8 U	3.5 U	3.8 U	3.4 U	4 UL	4.1 U	4 U	82 U
4,4'-DDT	0.64 J	0.4 J	0.52 J	3.4 U	4 UL	4.1 U	4 U	17 J
METHOXYCHLOR	19 U	2 J	3.3 J	17 U	20 UL	20 U	20 U	410 U
ENDRIN KETONE	3.8 U	3.5 U	0.16 J	3.4 U	4 UL	4.1 U	0.25 J	82 U
ENDRIN ALDEHYDE	3.8 U	3.5 U	3.8 U	3.4 U	4 UL	4.1 U	4 U	82 U
ALPHA-CHLORDANE	1.9 U	1.8 U	1.9 U	1.7 U	2 UL	2 U	2 U	41 U
GAMMA-CHLORDANE	1.9 U	1.8 U	1.9 U	1.7 U	2 UL	2 U	2 U	41 U
TOXAPHENE	190 U	180 U	190 U	170 U	200 UL	200 U	200 U	4100 U
AROCLOR-1016	38 U	35 U	38 U	34 U	40 UL	41 U	40 U	820 U
AROCLOR-1221	75 U	71 U	76 U	69 U	80 UL	82 U	79 U	1600 U
AROCLOR-1232	38 U	35 U	38 U	34 U	40 UL	41 U	40 U	820 U
AROCLOR-1242	38 U	35 U	38 U	34 U	40 UL	41 U	40 U	820 U
AROCLOR-1248	38 U	35 U	38 U	34 U	40 UL	41 U	40 U	820 U
AROCLOR-1254	38 U	35 U	38 U	34 U	40 UL	41 U	40 U	820 U
AROCLOR-1260	38 U	35 U	38 U	34 U	40 UL	41 U	40 U	820 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS06A	17SS06B	17SS07A	17SS07B	17SS08	17SS08D	17SS09	17SS10
DATE SAMPLED	11/03/96	11/03/96	11/02/96	11/02/96	11/03/96	11/03/96	11/03/96	11/03/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
EXPLOSIVES (mg/kg)								
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DNT/2,6-DNT 26	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
AMINO-DNTS	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRYL	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS11	17SS12	17SS12D	17SS13	17SS14	17SS15	17SS16	17SS16D
DATE SAMPLED	11/03/96	11/04/96	11/04/96	11/04/96	11/04/96	11/04/96	11/11/96	11/11/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
SEMIVOLATILES (ug/kg)								
PHENOL	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
BIS(2-CHLOROETHYL)ETHER	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
2-CHLOROPHENOL	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
1,3-DICHLOROBENZENE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
1,4-DICHLOROBENZENE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
1,2-DICHLOROBENZENE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
2-METHYLPHENOL	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
2,2'-OXYBIS(1-CHLOROPROPANE)	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
4-METHYLPHENOL	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
HEXACHLOROETHANE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
NITROBENZENE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
ISOPHORONE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
2-NITROPHENOL	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
2,4-DIMETHYLPHENOL	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
BIS(2-CHLOROETHOXY)METHANE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
2,4-DICHLOROPHENOL	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
1,2,4-TRICHLOROBENZENE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
NAPHTHALENE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
4-CHLOROANILINE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
HEXACHLOROBUTADIENE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
4-CHLORO-3-METHYLPHENOL	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
2-METHYLNAPHTHALENE	48 J	450 U	460 U	370 U	450 U	520 U	440 U	440 U
HEXACHLOROCYCLOPENTADIENE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
2,4,6-TRICHLOROPHENOL	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
2,4,5-TRICHLOROPHENOL	1000 U	1100 U	1100 U	900 U	1100 U	1300 U	1000 U	1100 U
2-CHLORONAPHTHALENE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
2-NITROANILINE	1000 U	1100 U	1100 U	900 U	1100 U	1300 U	1000 U	1100 U
DIMETHYLPHTHALATE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
ACENAPHTHYLENE	1200	450 U	460 U	370 U	450 U	520 U	440 U	440 U
2,6-DINITROTOLUENE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
3-NITROANILINE	1000 U	1100 U	1100 U	900 U	1100 U	1300 U	1000 U	1100 U
ACENAPHTHENE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
2,4-DINITROPHENOL	1000 U	1100 U	1100 U	900 U	1100 U	1300 U	1000 U	1100 U
4-NITROPHENOL	1000 U	1100 U	1100 U	900 U	1100 U	1300 U	1000 U	1100 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS11	17SS12	17SS12D	17SS13	17SS14	17SS15	17SS16	17SS16D
DATE SAMPLED	11/03/96	11/04/96	11/04/96	11/04/96	11/04/96	11/04/96	11/11/96	11/11/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
SEMIVOLATILES (ug/kg)(cont)								
DIBENZOFURAN	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
2,4-DINITROTOLUENE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
DIETHYLPHTHALATE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
4-CHLOROPHENYL-PHENYLETHER	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
FLUORENE	130 J	450 U	460 U	370 U	450 U	520 U	440 U	440 U
4-NITROANILINE	1000 U	1100 U	1100 U	900 U	1100 U	1300 U	1000 U	1100 U
4,6-DINITRO-2-METHYLPHENOL	1000 U	1100 U	1100 U	900 U	1100 U	1300 U	1000 U	1100 U
N-NITROSODIPHENYLAMINE (1)	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
4-BROMOPHENYL-PHENYLETHER	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
HEXACHLOROBENZENE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
PENTACHLOROPHENOL	1000 U	1100 U	1100 U	900 U	1100 U	1300 U	1000 U	1100 U
PHENANTHRENE	610	450 U	61 J	370 U	450 U	520 U	440 U	440 U
ANTHRACENE	310 J	450 U	460 U	370 U	450 U	520 U	440 U	440 U
CARBAZOLE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
DI-N-BUTYLPHTHALATE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
FLUORANTHENE	1300	65 J	110 J	370 U	450 U	95 J	440 U	440 U
PYRENE	2000	64 J	130 J	370 U	450 U	150 J	440 U	76 J
BUTYLBENZYLPHTHALATE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
3,3'-DICHLOROBENZIDINE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
BENZO(A)ANTHRACENE	1500	45 J	74 J	370 U	450 U	120 J	440 U	440 U
CHRYSENE	1600	47 J	82 J	370 U	450 U	130 J	440 U	440 U
BIS(2-ETHYLHEXYL)PHTHALATE	420 U	450 U	54 J	54 J	450 U	1300	47 J	440 U
DI-N-OCTYLPHTHALATE	420 U	450 U	460 U	370 U	450 U	520 U	440 U	440 U
BENZO(B)FLUORANTHENE	2600	60 J	96 J	370 U	450 U	200 J	48 J	440 U
BENZO(K)FLUORANTHENE	700	450 U	460 U	370 U	450 U	77 J	440 U	440 U
BENZO(A)PYRENE	2300	450 U	76 J	370 U	450 U	170 J	440 U	440 U
INDENO(1,2,3-CD)PYRENE	1100	450 U	460 U	370 U	450 U	110 J	440 U	440 U
DIBENZO(A,H)ANTHRACENE	460	450 U	460 U	370 U	450 U	520 U	440 U	440 U
BENZO(G,H,I)PERYLENE	1300	450 U	460 U	370 U	450 U	100 J	440 U	440 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS11	17SS12	17SS12D	17SS13	17SS14	17SS15	17SS16	17SS16D
DATE SAMPLED	11/03/96	11/04/96	11/04/96	11/04/96	11/04/96	11/04/96	11/11/96	11/11/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
PESTICIDES/PCBS (ug/kg)								
ALPHA-BHC	43 U	2.3 U	2.3 U	1.9 U	22 U	2.6 U	2.2 U	2.2 U
BETA-BHC	43 U	2.3 U	2.3 U	1.9 U	22 U	2.6 U	2.2 U	2.2 U
DELTA-BHC	43 U	2.3 U	2.3 U	1.9 U	22 U	2.6 U	2.2 U	2.2 U
HEPTACHLOR	43 U	2.3 U	2.3 U	1.9 U	22 U	2.6 U	2.2 U	2.2 U
ALDRIN	43 U	2.3 U	2.3 U	1.9 U	22 U	2.6 U	2.2 U	2.2 U
HEPTACHLOR EPOXIDE	43 U	2.3 U	2.3 U	1.9 U	22 U	2.6 U	2.2 U	2.2 U
ENDOSULFAN I	43 U	2.3 U	2.3 U	1.9 U	22 U	2.6 U	2.2 U	2.2 U
DIELDRIN	85 U	4.5 U	4.6 U	3.7 U	44 U	5.3 U	4.4 U	4.4 U
4,4'-DDE	85 U	4.5 U	4.6 U	0.75 J	44 U	0.7 J	4.4 U	4.4 U
ENDRIN	85 U	4.5 U	4.6 U	3.7 U	44 U	5.3 U	4.4 U	4.4 U
ENDOSULFAN II	85 U	4.5 U	4.6 U	3.7 U	44 U	5.3 U	4.4 U	4.4 U
4,4'-DDD	85 U	4.5 U	4.6 U	3.7 U	44 U	5.3 U	4.4 U	4.4 U
ENDOSULFAN SULFATE	85 U	4.5 U	4.6 U	3.7 U	44 U	5.3 U	4.4 U	4.4 U
4,4'-DDT	11 J	9 J	0.66 J	0.89 J	44 U	1.3 J	4.4 U	4.4 U
METHOXYCHLOR	430 U	40 J	23 U	2.1 J	220 U	26 U	22 U	22 U
ENDRIN KETONE	85 U	4.5 U	4.6 U	3.7 U	44 U	5.3 U	0.22 J	0.48 J
ENDRIN ALDEHYDE	85 U	4.5 U	4.6 U	3.7 U	44 U	5.3 U	4.4 U	4.4 U
ALPHA-CHLORDANE	43 U	2.3 U	2.3 U	1.9 U	22 U	2.6 U	2.2 U	2.2 U
GAMMA-CHLORDANE	43 U	2.3 U	2.3 U	1.9 U	22 U	2.6 U	2.2 U	2.2 U
TOXAPHENE	4300 U	230 U	230 U	190 U	2200 U	260 U	220 U	220 U
AROCLOR-1016	850 U	45 U	46 U	37 U	440 U	53 U	44 U	44 U
AROCLOR-1221	1700 U	91 U	93 U	75 U	890 U	100 U	88 U	89 U
AROCLOR-1232	850 U	45 U	46 U	37 U	440 U	53 U	44 U	44 U
AROCLOR-1242	850 U	45 U	46 U	37 U	440 U	53 U	44 U	44 U
AROCLOR-1248	850 U	45 U	46 U	37 U	440 U	53 U	44 U	44 U
AROCLOR-1254	850 U	45 U	46 U	37 U	440 U	53 U	44 U	44 U
AROCLOR-1260	850 U	45 U	46 U	37 U	440 U	53 U	44 U	44 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS11	17SS12	17SS12D	17SS13	17SS14	17SS15	17SS16	17SS16D
DATE SAMPLED	11/03/96	11/04/96	11/04/96	11/04/96	11/04/96	11/04/96	11/11/96	11/11/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
EXPLOSIVES (mg/kg)								
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DNT/2,6-DNT 26	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
AMINO-DNTS	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRYL	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg)								
PHENOL	340 U	1600 U	ND	ND		0/24	NA	NA
BIS(2-CHLOROETHYL)ETHER	340 U	1600 U	ND	ND		0/24	NA	NA
2-CHLOROPHENOL	340 U	1600 U	ND	ND		0/24	NA	NA
1,3-DICHLOROBENZENE	340 U	1600 U	ND	ND		0/24	NA	NA
1,4-DICHLOROBENZENE	340 U	1600 U	ND	ND		0/24	NA	NA
1,2-DICHLOROBENZENE	340 U	1600 U	ND	ND		0/24	NA	NA
2-METHYLPHENOL	340 U	1600 U	ND	ND		0/24	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	340 U	1600 U	ND	ND		0/24	NA	NA
4-METHYLPHENOL	340 U	1600 U	ND	ND		0/24	NA	NA
HEXACHLOROETHANE	340 U	1600 U	ND	ND		0/24	NA	NA
NITROBENZENE	340 U	1600 U	ND	ND		0/24	NA	NA
ISOPHORONE	340 U	1600 U	ND	ND		0/24	NA	NA
2-NITROPHENOL	340 U	1600 U	ND	ND		0/24	NA	NA
2,4-DIMETHYLPHENOL	340 U	1600 U	ND	ND		0/24	NA	NA
BIS(2-CHLOROETHOXY)METHANE	340 U	1600 U	ND	ND		0/24	NA	NA
2,4-DICHLOROPHENOL	340 U	1600 U	ND	ND		0/24	NA	NA
1,2,4-TRICHLOROBENZENE	340 U	1600 U	ND	ND		0/24	NA	NA
NAPHTHALENE	340 U	1600 U	54 J	390 J	17SS08	2/24	222.00	222.00
4-CHLOROANILINE	340 U	1600 U	ND	ND		0/24	NA	NA
HEXACHLOROBUTADIENE	340 U	1600 U	ND	ND		0/24	NA	NA
4-CHLORO-3-METHYLPHENOL	340 U	1600 U	ND	ND		0/24	NA	NA
2-METHYLNAPHTHALENE	340 U	1600 U	48 J	94 J	17SS08	2/24	71.00	71.00
HEXACHLOROCYCLOPENTADIENE	340 U	1600 U	ND	ND		0/24	NA	NA
2,4,6-TRICHLOROPHENOL	340 U	1600 U	ND	ND		0/24	NA	NA
2,4,5-TRICHLOROPHENOL	830 U	3900 U	ND	ND		0/24	NA	NA
2-CHLORONAPHTHALENE	340 U	1600 U	ND	ND		0/24	NA	NA
2-NITROANILINE	830 U	3900 U	ND	ND		0/24	NA	NA
DIMETHYLPHTHALATE	340 U	1600 U	ND	ND		0/24	NA	NA
ACENAPHTHYLENE	340 U	790 U	1200	2800	17SS10	2/24	2000.00	2000.00
2,6-DINITROTOLUENE	340 U	1600 U	ND	ND		0/24	NA	NA
3-NITROANILINE	830 U	3900 U	ND	ND		0/24	NA	NA
ACENAPHTHENE	340 U	520 U	51 J	430 J	17SS08	3/24	223.67	190.00
2,4-DINITROPHENOL	830 U	3900 U	ND	ND		0/24	NA	NA
4-NITROPHENOL	830 U	3900 U	ND	ND		0/24	NA	NA

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg)(cont)								
DIBENZOFURAN	340 U	1600 U	43 J	380 J	17SS08	2/24	211.50	211.50
2,4-DINITROTOLUENE	340 U	1600 U	ND	ND		0/24	NA	NA
DIETHYLPHTHALATE	340 U	1600 U	ND	ND		0/24	NA	NA
4-CHLOROPHENYL-PHENYLETHER	340 U	1600 U	ND	ND		0/24	NA	NA
FLUORENE	340 U	520 U	52 J	510 J	17SS08	4/24	270.50	260.00
4-NITROANILINE	830 U	3900 U	ND	ND		0/24	NA	NA
4,6-DINITRO-2-METHYLPHENOL	830 U	3900 U	ND	ND		0/24	NA	NA
N-NITROSODIPHENYLAMINE (1)	340 U	1600 U	ND	ND		0/24	NA	NA
4-BROMOPHENYL-PHENYLETHER	340 U	1600 U	ND	ND		0/24	NA	NA
HEXACHLOROBENZENE	340 U	1600 U	ND	ND		0/24	NA	NA
PENTACHLOROPHENOL	830 U	3900 U	ND	ND		0/24	NA	NA
PHENANTHRENE	340 U	520 U	61 J	4400 J	17SS08	7/24	1217.29	610.00
ANTHRACENE	340 U	520 U	98 J	1100 J	17SS10	4/24	579.50	560.00
CARBAZOLE	340 U	520 U	23 J	540 J	17SS08	4/24	199.50	117.50
DI-N-BUTYLPHTHALATE	340 U	1600 U	ND	ND		0/24	NA	NA
FLUORANTHENE	340 U	520 U	46 J	5900	17SS10	11/24	1146.36	280.00
PYRENE	340 U	520 U	55 J	9500	17SS10	12/24	1302.00	205.00
BUTYLBENZYLPHTHALATE	340 U	1600 U	ND	ND		0/24	NA	NA
3,3'-DICHLOROBENZIDINE	340 U	1600 U	ND	ND		0/24	NA	NA
BENZO(A)ANTHRACENE	340 U	520 U	45 J	6500	17SS10	9/24	1111.56	160.00
CHRYSENE	350 U	520 U	39 J	7600	17SS10	12/24	986.83	135.00
BIS(2-ETHYLHEXYL)PHTHALATE	340 U	790 U	46 J	1300	17SS15	7/24	245.57	54.00
DI-N-OCTYLPHTHALATE	340 U	1600 U	ND	ND		0/24	NA	NA
BENZO(B)FLUORANTHENE	340 U	520 U	48 J	8500	17SS10	12/24	1147.33	155.00
BENZO(K)FLUORANTHENE	340 U	520 U	41 J	3000	17SS10	9/24	519.11	94.00
BENZO(A)PYRENE	340 U	520 U	71 J	9500	17SS10	8/24	1682.13	185.00
INDENO(1,2,3-CD)PYRENE	340 U	520 U	54 J	4300	17SS10	7/24	887.29	110.00
DIBENZO(A,H)ANTHRACENE	340 U	520 U	160 J	1700	17SS10	3/24	773.33	460.00
BENZO(G,H,I)PERYLENE	340 U	520 U	57 J	5000	17SS10	7/24	1014.86	100.00

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDES/PCBS (ug/kg)								
ALPHA-BHC	1.7 U	43 U	ND	ND		0/24	NA	NA
BETA-BHC	1.7 U	43 U	ND	ND		0/24	NA	NA
DELTA-BHC	1.7 U	43 U	ND	ND		0/24	NA	NA
HEPTACHLOR	1.7 U	43 U	ND	ND		0/24	NA	NA
ALDRIN	1.7 U	43 U	ND	ND		0/24	NA	NA
HEPTACHLOR EPOXIDE	1.7 U	43 U	ND	ND		0/24	NA	NA
ENDOSULFAN I	1.7 U	43 U	ND	ND		0/24	NA	NA
DIELDRIN	3.4 U	85 U	0.24 J	0.24 J	17SS06A	1/24	0.24	0.24
4,4'-DDE	3.4 U	85 U	0.34 J	0.75 J	17SS13	7/24	0.56	0.63
ENDRIN	3.4 U	85 U	1.1 J	1.1 J	17SS01A	1/24	1.10	1.10
ENDOSULFAN II	3.4 U	85 U	ND	ND		0/24	NA	NA
4,4'-DDD	3.4 U	85 U	ND	ND		0/24	NA	NA
ENDOSULFAN SULFATE	3.4 U	85 U	ND	ND		0/24	NA	NA
4,4'-DDT	3.4 U	44 U	0.13 J	17 J	17SS10	15/24	2.96	0.64
METHOXYCHLOR	17 U	430 U	0.8 J	40 J	17SS12	6/24	8.28	2.05
ENDRIN KETONE	3.4 U	85 U	0.16 J	0.48 J	17SS16D	4/24	0.28	0.24
ENDRIN ALDEHYDE	3.4 U	85 U	ND	ND		0/24	NA	NA
ALPHA-CHLORDANE	1.7 U	43 U	0.24 J	0.24 J	17SS02B	1/24	0.24	0.24
GAMMA-CHLORDANE	1.7 U	43 U	ND	ND		0/24	NA	NA
TOXAPHENE	170 U	4300 U	ND	ND		0/24	NA	NA
AROCLOR-1016	34 U	850 U	ND	ND		0/24	NA	NA
AROCLOR-1221	69 U	1700 U	ND	ND		0/24	NA	NA
AROCLOR-1232	34 U	850 U	ND	ND		0/24	NA	NA
AROCLOR-1242	34 U	850 U	ND	ND		0/24	NA	NA
AROCLOR-1248	34 U	850 U	ND	ND		0/24	NA	NA
AROCLOR-1254	34 U	850 U	ND	ND		0/24	NA	NA
AROCLOR-1260	34 U	850 U	ND	ND		0/24	NA	NA

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
EXPLOSIVES (mg/kg)								
1,3-DINITROBENZENE	0.25 U	0.25 U	ND	ND		0/24	NA	NA
2,4-DNT/2,6-DNT 26	0.25 U	0.25 U	ND	ND		0/24	NA	NA
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	ND	ND		0/24	NA	NA
HMX	0.5 U	0.5 U	ND	ND		0/24	NA	NA
NITROBENZENE	0.25 U	0.25 U	ND	ND		0/24	NA	NA
2-NITROTOLUENE	0.25 U	0.25 U	ND	ND		0/24	NA	NA
3-NITROTOLUENE	0.25 U	0.25 U	ND	ND		0/24	NA	NA
AMINO-DNTS	0.25 U	0.25 U	ND	ND		0/24	NA	NA
RDX	0.5 U	0.5 U	ND	ND		0/24	NA	NA
TETRYL	0.65 U	0.65 U	ND	ND		0/24	NA	NA
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	ND	ND		0/24	NA	NA

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS01A	17SS01B	17SS02A	17SS02B	17SS03A	17SS03B	17SS05A	17SS05B
DATE SAMPLED	11/02/96	11/02/96	11/02/96	11/02/96	11/03/96	11/03/96	11/02/96	11/02/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
TOTAL INORGANICS (mg/kg)								
ALUMINUM	7730	4720	5160	5380	4630	4970	3470	2850
ANTIMONY	0.93 UL	0.76 UL	0.74 UL	0.71 UL	0.72 U	0.68 U	0.95 UL	0.7 UL
ARSENIC	5.5	1	1.8	1.3	2.1	1.8	2.8	1.8
BARIUM	28.3	22.7	19	23.2	26	23.5	17.3	17
BERYLLIUM	0.31 U	0.25 U	0.25 U	0.24 U	0.24 U	0.23 U	0.32 U	0.23 U
CADMIUM	0.31 U	0.25 U	0.25 U	0.24 U	0.24 U	0.23 U	0.32 U	0.23 U
CALCIUM	6550	246	547	250	1400	669	602	476
CHROMIUM	15	4.2	5.6	4.8	6.4	5.2	6.5	4.7
COBALT	2.5	0.51	0.61	0.66	1.4	0.68	1.6	1.1
COPPER	5	1.7	2	2.1	27.6	1.5	2.4	1.9
IRON	12300	2860	4800	3640	5170	3850	5550	3840
LEAD	11	7.6	4.1	7.6	19.4	5.8	11.2	9.4
MAGNESIUM	1170	333	423	382	361	384	462	306
MANGANESE	74.2	42.5	24.9	36.9	91.7	37.5	93.1	74.6
MERCURY	0.08 U	0.06 U	0.06 U	0.06 U	0.1	0.06	0.12	0.1
NICKEL	5.5	2.3	1.9	2.4	3.3	2.3	3.3	2.3
POTASSIUM	946	144	168	148	249	204	384	178
SELENIUM	0.93 UL	0.76 UL	0.74 UL	0.71 UL	0.72 U	0.68 U	1.5 L	0.99 L
SILVER	0.31 U	0.25 U	0.25 U	0.24 U	0.24 U	0.23 U	0.32 U	0.23 U
SODIUM	109 B	58.1 B	60.2 B	54.6 B	29.9 U	28.4 U	57.9 B	35.6 B
THALLIUM	1.9 U	1.5 U	1.5 U	1.4 U	1.4 U	1.4 U	1.9 U	1.4 U
VANADIUM	18.9	8.5	9.7	10	11.5	9.5	11.3	7.9
ZINC	32	8.6	7.1 K	9.6	39.9	13 B	15.5	13.7
CYANIDE	0.23 U	0.19 U	0.18 U	0.17 U	0.17 U	0.17 U	0.24 U	0.17 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS06A	17SS06B	17SS07A	17SS07B	17SS08	17SS08D	17SS09	17SS10
DATE SAMPLED	11/03/96	11/03/96	11/02/96	11/02/96	11/03/96	11/03/96	11/03/96	11/03/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
TOTAL INORGANICS (mg/kg)								
ALUMINUM	4800	4680	4220	3470	4100	5230	3250	4300
ANTIMONY	0.67 U	0.64 U	0.68 UL	0.62 UL	0.72 U	0.74 U	0.71 U	0.83 B
ARSENIC	2.1	3.4	2	2.5	2.9	2.8	2.9	3.5
BARIUM	16.7	12.9	17.6	15	22.4	25.6	22.3	29
BERYLLIUM	0.22 U	0.21 U	0.23 U	0.21 U	0.24 U	0.25 U	0.24 U	0.29
CADMIUM	0.22 U	0.21 U	0.23 U	0.21 U	0.24 U	0.25 U	0.24 U	0.25 U
CALCIUM	425	388	235	195	948	753	979	1780
CHROMIUM	5.8	7.5	4.7	4.3	5.7	6.9	5.2	9.4
COBALT	0.82	1	0.88	0.84	1.2	1.4	1	2.3
COPPER	2.4	3.8	4.7	3.3	2.5	2.6	2.7	4
IRON	4840	5030	6020	6780	4220	4610	3900	6380
LEAD	9	8.8	5	5.4	20.2	23.3	9.7	26.8
MAGNESIUM	386	318	282	217	319	388	272	533
MANGANESE	16.5	33.5	64.9	63.6	97.8	108	105	166
MERCURY	0.19	0.15	0.06 U	0.05 U	0.08 B	0.08 B	0.08 B	0.13
NICKEL	3.2	3.9	2	1.6	2.7	3	2.4	4.4
POTASSIUM	194	255	95	76.5	214	283	214	373
SELENIUM	0.67 U	0.64 U	0.68 UL	0.62 UL	0.72 U	0.74 U	0.71 U	0.74 U
SILVER	0.22 U	0.21 U	0.23 U	2.1 U	0.24 U	0.25 U	0.24 U	0.25 U
SODIUM	28.1 U	26.5 U	28.4 U	25.9 U	30.1 U	30.6 U	29.7 U	30.6 U
THALLIUM	1.3 U	1.3 U	1.4 U	1.2 U	1.4 U	1.5 U	1.4 U	1.5 U
VANADIUM	15.8	17.7	10.5	13	9.3	11.3	8.2	13.4
ZINC	9.3 B	8 B	8.1	8.6	22.7	24.1	17.3	124
CYANIDE	0.16 U	0.16 U	0.17 U	0.15 U	0.17 U	0.18 U	0.18 U	0.19

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS11	17SS12	17SS12D	17SS13	17SS14	17SS15	17SS16	17SS16D
DATE SAMPLED	11/03/96	11/04/96	11/04/96	11/04/96	11/04/96	11/04/96	11/11/96	11/11/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
TOTAL INORGANICS (mg/kg)								
ALUMINUM	5070	5040	4780	3320	4940	7950	3460	2360
ANTIMONY	0.77 U	0.82 U	0.84 U	0.67 U	1.2 B	0.95 U	0.83 U	0.8 U
ARSENIC	3.4	3.5	3.1	1.2	4.8	2.7	1.9 L	1.5 L
BARIUM	31	32.3	31.4	12	27.7	34.2	14.2	11.3
BERYLLIUM	0.26 U	0.27 U	0.28 U	0.22 U	0.27 U	0.32 U	0.28 U	0.27 U
CADMIUM	0.26 U	0.27 U	0.28 U	0.22 U	0.27 U	0.32 U	0.28 U	0.27 U
CALCIUM	1170	2610	2690	125	5260	1210	759	559
CHROMIUM	9.2	8.2	7.3	2.9 K	12.6	10.1	4.6	3.5
COBALT	2.2	1.7	1.7	0.45 U	3	2.6	1.3	0.86
COPPER	6.2	3.9	4	1.9	3.7	4.1	1.9	1.2
IRON	7380	6260	5790	2150	11100	6880	4200	3260
LEAD	29	15.2	15	6.8	9.9	15.8	3.7	2.5
MAGNESIUM	493	472	467	202	1070	540	288	201
MANGANESE	194	254	266	16.6	180	131	55.1	35.1
MERCURY	0.1	0.1	0.11	0.08 B	0.12	0.18	0.07 U	0.07 U
NICKEL	4.5	4.3	4.1	1.4	6.2	4.9	2.6	2
POTASSIUM	394	350	327	91 B	839	362	247	178
SELENIUM	0.77 U	0.82 U	0.84 U	0.67 U	0.82 U	0.95 U	0.83 U	0.95
SILVER	0.26 U	0.27 U	0.28 U	0.22 U	0.27 U	0.32 U	0.28 U	0.27 U
SODIUM	31.9 U	40.6 B	34.8 U	28.1 U	34.2 U	39.6 U	141 B	132 B
THALLIUM	1.5 U	1.6 U	1.7 U	1.3 U	1.6 U	1.9 U	1.7 U	1.6 U
VANADIUM	14.6	14.5	13.7	6.4	15.7	19	9.8	6.9
ZINC	34.7	31.7	30.8	5.6 K	25.3	25.6	6.9	4.5
CYANIDE	0.19 U	0.22	0.2	0.17 U	0.2 U	0.26	0.2 U	0.19 U

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
TOTAL INORGANICS (mg/kg)								
ALUMINUM	NA	NA	2360	7950	17SS15	24/24	4578.33	4700.00
ANTIMONY	0.62 UL	1.2 B	ND	ND		0/24	NA	NA
ARSENIC	NA	NA	1	5.5	17SS01A	24/24	2.60	2.60
BARIUM	NA	NA	11.3	34.2	17SS15	24/24	22.19	22.55
BERYLLIUM	0.21 U	0.32 U	0.29	0.29	17SS10	1/24	0.29	0.29
CADMIUM	0.21 U	0.32 U	ND	ND		0/24	NA	NA
CALCIUM	NA	NA	125	6550	17SS01A	24/24	1284.42	711.00
CHROMIUM	NA	NA	2.9 K	15	17SS01A	24/24	6.68	5.75
COBALT	0.45 U	0.45 U	0.51	3	17SS14	23/24	1.39	1.20
COPPER	NA	NA	1.2	27.6	17SS03A	24/24	4.05	2.65
IRON	NA	NA	2150	12300	17SS01A	24/24	5450.42	4935.00
LEAD	NA	NA	2.5	29	17SS11	24/24	11.76	9.55
MAGNESIUM	NA	NA	201	1170	17SS01A	24/24	427.88	383.00
MANGANESE	NA	NA	16.5	266	17SS12D	24/24	94.27	74.40
MERCURY	0.05 U	0.08 U	0.06	0.19	17SS06A	12/24	0.12	0.12
NICKEL	NA	NA	1.4	6.2	17SS14	24/24	3.19	2.85
POTASSIUM	91 B	91 B	76.5	946	17SS01A	23/24	296.63	247.00
SELENIUM	0.62 UL	0.95 U	0.95	1.5 L	17SS05A	3/24	1.15	0.99
SILVER	0.21 U	2.1 U	ND	ND		0/24	NA	NA
SODIUM	25.9 U	141 B	ND	ND		0/24	NA	NA
THALLIUM	1.2 U	1.9 U	ND	ND		0/24	NA	NA
VANADIUM	NA	NA	6.4	19	17SS15	24/24	11.96	11.30
ZINC	8 B	13 B	4.5	124	17SS10	21/24	23.63	17.30
CYANIDE	0.15 U	0.24 U	0.19	0.26	17SS15	4/24	0.22	0.21

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS01A	17SS01B	17SS02A	17SS02B	17SS03A	17SS03B	17SS05A
DATE SAMPLED	11/02/96	11/02/96	11/02/96	11/02/96	11/03/96	11/03/96	11/02/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
ENGINEERING							
PERCENT MOISTURE (%)	35.7	21.1	18.7	15.9	16.5	12	36.6
PH (SOLID)	NA	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON (mg/kg)	12000	NA	NA	NA	NA	NA	NA
CATION EXCHANGE CAPACITY (mg/kg)	9900	NA	NA	NA	NA	NA	NA

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS05B	17SS06A	17SS06B	17SS07A	17SS07B	17SS08	17SS08D
DATE SAMPLED	11/02/96	11/03/96	11/03/96	11/02/96	11/02/96	11/03/96	11/03/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
ENGINEERING							
PERCENT MOISTURE (%)	14.2	11.1	5.6	12.1	3.4	16.9	18.4
PH (SOLID)	NA	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON (mg/kg)	NA	NA	NA	NA	NA	NA	NA
CATION EXCHANGE CAPACITY (mg/kg)	NA	NA	NA	NA	NA	NA	NA

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS09	17SS10	17SS11	17SS12	17SS12D	17SS13	17SS14
DATE SAMPLED	11/03/96	11/03/96	11/03/96	11/04/96	11/04/96	11/04/96	11/04/96
DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
ENGINEERING							
PERCENT MOISTURE (%)	15.8	18.4	21.7	26.5	28.2	11	27
PH (SOLID)	NA	NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON (mg/kg)	NA	NA	NA	1800	NA	NA	NA
CATION EXCHANGE CAPACITY (mg/kg)	NA	NA	NA	6100	NA	NA	NA

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17SS15	17SS16	17SS16D
DATE SAMPLED	11/04/96	11/11/96	11/11/96
DEPTH	0-6"	0-6"	0-6"
ENGINEERING			
PERCENT MOISTURE (%)	36.8	27.8	25.1
PH (SOLID)	NA	6.5	NA
TOTAL ORGANIC CARBON (mg/kg)	NA	NA	NA
CATION EXCHANGE CAPACITY (mg/kg)	NA	NA	NA

SURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
ENGINEERING								
PERCENT MOISTURE (%)	NA	NA	3.4	36.8	17SS15	24/24	19.85	18.40
PH (SOLID)	NA	NA	6.5	6.5	17SS16	1/1	6.50	6.50
TOTAL ORGANIC CARBON (mg/kg)	NA	NA	1800	12000	17SS01A	2/2	6900.00	6900.00
CATION EXCHANGE CAPACITY (mg/kg)	NA	NA	6100	9900	17SS01A	2/2	8000.00	8000.00

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17TP01A-07	17TP01B-07	17TP02A-07	17TP03B-01	17TP03B-01D	17TP05A-03
DATE SAMPLED	11/02/96	11/02/96	11/03/96	11/03/96	11/03/96	11/02/96
DEPTH	6-7'	6-7'	6-7'	0.5-1'	03-1'	03-1'
VOLATILES (ug/kg)						
CHLOROMETHANE	13 U	11 U	12 U	12 U	13 U	12 U
BROMOMETHANE	13 U	11 U	12 U	12 U	13 U	12 U
VINYL CHLORIDE	13 U	11 U	12 U	12 U	13 U	12 U
CHLOROETHANE	13 U	11 U	12 U	12 U	13 U	12 U
METHYLENE CHLORIDE	13 U	11 U	12 U	12 U	13 U	12 U
ACETONE	13 U	11 U	12 U	12 U	13 U	12 U
CARBON DISULFIDE	13 U	11 U	12 U	12 U	13 U	12 U
1,1-DICHLOROETHENE	13 U	11 U	12 U	12 U	13 U	12 U
1,1-DICHLOROETHANE	13 U	11 U	12 U	12 U	13 U	12 U
1,2-DICHLOROETHENE (TOTAL)	13 U	11 U	12 U	12 U	13 U	12 U
CHLOROFORM	13 U	11 U	12 U	12 U	13 U	12 U
1,2-DICHLOROETHANE	13 U	11 U	12 U	12 U	13 U	12 U
2-BUTANONE	13 U	11 U	12 U	12 U	13 U	12 U
1,1,1-TRICHLOROETHANE	13 U	11 U	12 U	12 UJ	13 U	12 U
CARBON TETRACHLORIDE	13 U	11 U	12 U	12 UJ	13 U	12 U
BROMODICHLOROMETHANE	13 U	11 U	12 U	12 UJ	13 U	12 U
1,2-DICHLOROPROPANE	13 U	11 U	12 U	12 UJ	13 U	12 U
CIS-1,3-DICHLOROPROPENE	13 U	11 U	12 U	12 UJ	13 U	12 U
TRICHLOROETHENE	13 U	11 U	12 U	12 UJ	13 U	12 U
DIBROMOCHLOROMETHANE	13 U	11 U	12 U	12 UJ	13 U	12 U
1,1,2-TRICHLOROETHANE	13 U	11 U	12 U	12 UJ	13 U	12 U
BENZENE	13 U	11 U	12 U	12 UJ	13 U	12 U
TRANS-1,3-DICHLOROPROPENE	13 U	11 U	12 U	12 UJ	13 U	12 U
BROMOFORM	13 U	11 U	12 U	12 UJ	13 U	12 U
4-METHYL-2-PENTANONE	13 U	11 U	12 U	12 UJ	13 U	12 U
2-HEXANONE	13 U	11 U	12 U	12 UJ	13 U	12 U
TETRACHLOROETHENE	13 U	11 U	12 U	12 UJ	13 U	12 U
1,1,2,2-TETRACHLOROETHANE	13 U	11 U	12 U	12 UJ	13 U	12 U
TOLUENE	13 U	11 U	12 U	12 UJ	13 U	12 U
CHLOROBENZENE	13 U	11 U	12 U	12 UJ	13 U	12 U
ETHYLBENZENE	13 U	11 U	12 U	12 UJ	13 U	12 U
STYRENE	13 U	11 U	12 U	12 UJ	13 U	12 U
XYLENES (TOTAL)	13 U	11 U	12 U	12 UJ	13 U	12 U

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17TP01A-07	17TP01B-07	17TP02A-07	17TP03B-01	17TP03B-01D	17TP05A-03
DATE SAMPLED	11/02/96	11/02/96	11/03/96	11/03/96	11/03/96	11/02/96
DEPTH	6-7'	6-7'	6-7'	0.5-1'	03-1'	03-1'
SEMIVOLATILES (ug/kg)						
PHENOL	440 U	360 U	380 U	400 U	420 U	390 U
BIS(2-CHLOROETHYL)ETHER	440 U	360 U	380 U	400 U	420 U	390 U
2-CHLOROPHENOL	440 U	360 U	380 U	400 U	420 U	390 U
1,3-DICHLOROBENZENE	440 U	360 U	380 U	400 U	420 U	390 U
1,4-DICHLOROBENZENE	440 U	360 U	380 U	400 U	420 U	390 U
1,2-DICHLOROBENZENE	440 U	360 U	380 U	400 U	420 U	390 U
2-METHYLPHENOL	440 U	360 U	380 U	400 U	420 U	390 U
2,2'-OXYBIS(1-CHLOROPROPANE)	440 U	360 U	380 U	400 U	420 U	390 U
4-METHYLPHENOL	440 U	360 U	380 U	400 U	420 U	390 U
HEXACHLOROETHANE	440 U	360 U	380 U	400 U	420 U	390 U
NITROBENZENE	440 U	360 U	380 U	400 U	420 U	390 U
ISOPHORONE	440 U	360 U	380 U	400 U	420 U	390 U
2-NITROPHENOL	440 U	360 U	380 U	400 U	420 U	390 U
2,4-DIMETHYLPHENOL	440 U	360 U	380 U	400 U	420 U	390 U
BIS(2-CHLOROETHOXY)METHANE	440 U	360 U	380 U	400 U	420 U	390 U
2,4-DICHLOROPHENOL	440 U	360 U	380 U	400 U	420 U	390 U
1,2,4-TRICHLOROBENZENE	440 U	360 U	380 U	400 U	420 U	390 U
NAPHTHALENE	440 U	360 U	380 U	46 J	420 U	390 U
4-CHLOROANILINE	440 U	360 U	380 U	400 U	420 U	390 U
HEXACHLOROBUTADIENE	440 U	360 U	380 U	400 U	420 U	390 U
4-CHLORO-3-METHYLPHENOL	440 U	360 U	380 U	400 U	420 U	390 U
2-METHYLNAPHTHALENE	440 U	360 U	380 U	400 U	420 U	390 U
HEXACHLOROCYCLOPENTADIENE	440 U	360 U	380 U	400 U	420 U	390 U
2,4,6-TRICHLOROPHENOL	440 U	360 U	380 U	400 U	420 U	390 U
2,4,5-TRICHLOROPHENOL	1100 U	870 U	940 U	960 U	1000 U	950 U
2-CHLORONAPHTHALENE	440 U	360 U	380 U	400 U	420 U	390 U
2-NITROANILINE	1100 U	870 U	940 U	960 U	1000 U	950 U
DIMETHYLPHTHALATE	440 U	360 U	380 U	400 U	420 U	390 U
ACENAPHTHYLENE	440 U	360 U	380 U	400 U	420 U	390 U
2,6-DINITROTOLUENE	440 U	360 U	380 U	400 U	420 U	390 U
3-NITROANILINE	1100 U	870 U	940 U	960 U	1000 U	950 U
ACENAPHTHENE	440 U	360 U	380 U	84 J	420 U	390 U
2,4-DINITROPHENOL	1100 U	870 U	940 U	960 U	1000 U	950 U
4-NITROPHENOL	1100 U	870 U	940 U	960 U	1000 U	950 U

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17TP01A-07	17TP01B-07	17TP02A-07	17TP03B-01	17TP03B-01D	17TP05A-03
DATE SAMPLED	11/02/96	11/02/96	11/03/96	11/03/96	11/03/96	11/02/96
DEPTH	6-7'	6-7'	6-7'	0.5-1'	03-1'	03-1'
SEMIVOLATILES (ug/kg) (cont)						
DIBENZOFURAN	440 U	360 U	380 U	44 J	420 U	390 U
2,4-DINITROTOLUENE	440 U	360 U	380 U	400 U	420 U	390 U
DIETHYLPHTHALATE	440 U	360 U	380 U	400 U	420 U	390 U
4-CHLOROPHENYL-PHENYLETHER	440 U	360 U	380 U	400 U	420 U	390 U
FLUORENE	440 U	360 U	380 U	66 J	420 U	390 U
4-NITROANILINE	1100 U	870 U	940 U	960 U	1000 U	950 U
4,6-DINITRO-2-METHYLPHENOL	1100 U	870 U	940 U	960 U	1000 U	950 U
N-NITROSODIPHENYLAMINE (1)	440 U	360 U	380 U	400 U	420 U	390 U
4-BROMOPHENYL-PHENYLETHER	440 U	360 U	380 U	400 U	420 U	390 U
HEXACHLOROBENZENE	440 U	360 U	380 U	400 U	420 U	390 U
PENTACHLOROPHENOL	1100 U	870 U	940 U	960 U	1000 U	950 U
PHENANTHRENE	440 U	360 U	380 U	590	55 J	390 U
ANTHRACENE	440 U	360 U	380 U	76 J	420 U	390 U
CARBAZOLE	440 U	360 U	380 U	55 J	420 U	390 U
DI-N-BUTYLPHTHALATE	440 U	360 U	380 U	400 U	420 U	390 U
FLUORANTHENE	440 U	360 U	380 U	580	92 J	390 U
PYRENE	440 U	360 U	380 U	440	140 J	390 U
BUTYLBENZYLPHTHALATE	440 U	360 U	380 U	400 U	420 U	390 U
3,3'-DICHLOROBENZIDINE	440 U	360 U	380 U	400 U	420 U	390 U
BENZO(A)ANTHRACENE	440 U	360 U	380 U	260 J	55 J	390 U
CHRYSENE	440 U	360 U	380 U	240 J	61 J	390 U
BIS(2-ETHYLHEXYL)PHTHALATE	440 U	360 U	380 U	400 U	420 U	390 U
DI-N-OCTYLPHTHALATE	440 U	360 U	380 U	400 U	420 U	390 U
BENZO(B)FLUORANTHENE	440 U	360 U	380 U	300 J	100 J	390 U
BENZO(K)FLUORANTHENE	440 U	360 U	380 U	100 J	53 J	390 U
BENZO(A)PYRENE	440 U	360 U	380 U	220 J	91 J	390 U
INDENO(1,2,3-CD)PYRENE	440 U	360 U	380 U	120 J	76 J	390 U
DIBENZO(A,H)ANTHRACENE	440 U	360 U	380 U	400 U	420 U	390 U
BENZO(G,H,I)PERYLENE	440 U	360 U	380 U	130 J	120 J	390 U

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17TP01A-07	17TP01B-07	17TP02A-07	17TP03B-01	17TP03B-01D	17TP05A-03
DATE SAMPLED	11/02/96	11/02/96	11/03/96	11/03/96	11/03/96	11/02/96
DEPTH	6-7'	6-7'	6-7'	0.5-1'	03-1'	03-1'
PESTICIDES/PCBS (ug/kg)						
ALPHA-BHC	2.2 U	1.8 U	1.9 U	2 U	11 U	2 U
BETA-BHC	2.2 U	1.8 U	1.9 U	2 U	11 U	2 U
DELTA-BHC	2.2 U	1.8 U	1.9 U	2 U	11 U	2 U
HEPTACHLOR	2.2 U	1.8 U	1.9 U	2 U	11 U	2 U
ALDRIN	2.2 U	1.8 U	1.9 U	2 U	11 U	2 U
HEPTACHLOR EPOXIDE	2.2 U	1.8 U	1.9 U	2 U	11 U	2 U
ENDOSULFAN I	2.2 U	1.8 U	1.9 U	2 U	11 U	2 U
DIELDRIN	4.4 U	3.6 U	3.8 U	4 U	21 U	0.34 J
4,4'-DDE	4.4 U	3.6 U	3.8 U	4 U	21 U	0.25 J
ENDRIN	4.4 U	3.6 U	3.8 U	4 U	21 U	0.4 J
ENDOSULFAN II	4.4 U	3.6 U	3.8 U	4 U	21 U	4 U
4,4'-DDD	4.4 U	3.6 U	3.8 U	4 U	21 U	4 U
ENDOSULFAN SULFATE	4.4 U	3.6 U	3.8 U	4 U	21 U	4 U
4,4'-DDT	4.4 U	3.6 U	3.8 U	0.45 J	21 U	25
METHOXYCHLOR	22 U	0.85 J	0.56 J	1.2 J	110 U	89
ENDRIN KETONE	4.4 U	3.6 U	3.8 U	4 U	21 U	4 U
ENDRIN ALDEHYDE	4.4 U	3.6 U	3.8 U	4 U	21 U	4 U
ALPHA-CHLORDANE	2.2 U	1.8 U	1.9 U	2 U	11 U	2 U
GAMMA-CHLORDANE	2.2 U	1.8 U	1.9 U	2 U	11 U	2 U
TOXAPHENE	220 U	180 U	190 U	200 U	1100 U	200 U
AROCLOR-1016	44 U	36 U	38 U	40 U	210 U	40 U
AROCLOR-1221	89 U	73 U	77 U	81 U	420 U	79 U
AROCLOR-1232	44 U	36 U	38 U	40 U	210 U	40 U
AROCLOR-1242	44 U	36 U	38 U	40 U	210 U	40 U
AROCLOR-1248	44 U	36 U	38 U	40 U	210 U	40 U
AROCLOR-1254	44 U	36 U	38 U	40 U	210 U	40 U
AROCLOR-1260	44 U	36 U	38 U	40 U	210 U	40 U

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17TP01A-07	17TP01B-07	17TP02A-07	17TP03B-01	17TP03B-01D	17TP05A-03
DATE SAMPLED	11/02/96	11/02/96	11/03/96	11/03/96	11/03/96	11/02/96
DEPTH	6-7'	6-7'	6-7'	0.5-1'	03-1'	03-1'
EXPLOSIVES (mg/kg)						
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DNT/2,6-DNT 26	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
AMINO-DNTS	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRYL	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17TP05B-03	17TP06A-03	17TP06B-03	17TP07A-08	17TP07B-08
DATE SAMPLED	11/02/96	11/03/96	11/03/96	11/02/96	11/02/96
DEPTH	2-3'	2-3'	2-3'	7-8'	7-8'
VOLATILES (ug/kg)					
CHLOROMETHANE	11 U	13 U	12 U	12 U	13 U
BROMOMETHANE	11 U	13 U	12 U	12 U	13 U
VINYL CHLORIDE	11 U	13 U	12 U	12 U	13 U
CHLOROETHANE	11 U	13 U	12 U	12 U	13 U
METHYLENE CHLORIDE	11 U	13 U	12 U	12 U	13 U
ACETONE	11 U	13 U	38 B	21 B	13 U
CARBON DISULFIDE	11 U	13 U	12 U	12 U	13 U
1,1-DICHLOROETHENE	11 U	13 U	12 U	12 U	13 U
1,1-DICHLOROETHANE	11 U	13 U	12 U	12 U	13 U
1,2-DICHLOROETHENE (TOTAL)	11 U	13 U	12 U	12 U	13 U
CHLOROFORM	11 U	13 U	12 U	12 U	13 U
1,2-DICHLOROETHANE	11 U	13 U	12 U	12 U	13 U
2-BUTANONE	11 U	13 U	12 U	12 U	13 U
1,1,1-TRICHLOROETHANE	11 U	13 U	12 U	12 U	13 U
CARBON TETRACHLORIDE	11 U	13 U	12 U	12 U	13 U
BROMODICHLOROMETHANE	11 U	13 U	12 U	12 U	13 U
1,2-DICHLOROPROPANE	11 U	13 U	12 U	12 U	13 U
CIS-1,3-DICHLOROPROPENE	11 U	13 U	12 U	12 U	13 U
TRICHLOROETHENE	11 U	13 U	12 U	12 U	13 U
DIBROMOCHLOROMETHANE	11 U	13 U	12 U	12 U	13 U
1,1,2-TRICHLOROETHANE	11 U	13 U	12 U	12 U	13 U
BENZENE	11 U	13 U	12 U	12 U	13 U
TRANS-1,3-DICHLOROPROPENE	11 U	13 U	12 U	12 U	13 U
BROMOFORM	11 U	13 U	12 U	12 U	13 U
4-METHYL-2-PENTANONE	11 U	13 U	12 U	12 U	13 U
2-HEXANONE	11 U	13 U	12 U	12 U	13 U
TETRACHLOROETHENE	11 U	13 U	12 U	12 U	13 U
1,1,2,2-TETRACHLOROETHANE	11 U	13 U	12 U	12 U	13 U
TOLUENE	11 U	13 U	12 U	12 U	13 U
CHLOROBENZENE	11 U	13 U	12 U	12 U	13 U
ETHYLBENZENE	11 U	13 U	12 U	12 U	13 U
STYRENE	11 U	13 U	12 U	12 U	13 U
XYLENES (TOTAL)	11 U	13 U	12 U	12 U	13 U

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17TP05B-03	17TP06A-03	17TP06B-03	17TP07A-08	17TP07B-08
DATE SAMPLED	11/02/96	11/03/96	11/03/96	11/02/96	11/02/96
DEPTH	2-3'	2-3'	2-3'	7-8'	7-8'
SEMIVOLATILES (ug/kg)					
PHENOL	380 U	420 U	380 U	420 U	420 U
BIS(2-CHLOROETHYL)ETHER	380 U	420 U	380 U	420 U	420 U
2-CHLOROPHENOL	380 U	420 U	380 U	420 U	420 U
1,3-DICHLOROBENZENE	380 U	420 U	380 U	420 U	420 U
1,4-DICHLOROBENZENE	380 U	420 U	380 U	420 U	420 U
1,2-DICHLOROBENZENE	380 U	420 U	380 U	420 U	420 U
2-METHYLPHENOL	380 U	420 U	380 U	420 U	420 U
2,2'-OXYBIS(1-CHLOROPROPANE)	380 U	420 U	380 U	420 U	420 U
4-METHYLPHENOL	380 U	420 U	380 U	420 U	420 U
HEXACHLOROETHANE	380 U	420 U	380 U	420 U	420 U
NITROBENZENE	380 U	420 U	380 U	420 U	420 U
ISOPHORONE	380 U	420 U	380 U	420 U	420 U
2-NITROPHENOL	380 U	420 U	380 U	420 U	420 U
2,4-DIMETHYLPHENOL	380 U	420 U	380 U	420 U	420 U
BIS(2-CHLOROETHOXY)METHANE	380 U	420 U	380 U	420 U	420 U
2,4-DICHLOROPHENOL	380 U	420 U	380 U	420 U	420 U
1,2,4-TRICHLOROBENZENE	380 U	420 U	380 U	420 U	420 U
NAPHTHALENE	380 U	420 U	380 U	420 U	420 U
4-CHLOROANILINE	380 U	420 U	380 U	420 U	420 U
HEXACHLOROBUTADIENE	380 U	420 U	380 U	420 U	420 U
4-CHLORO-3-METHYLPHENOL	380 U	420 U	380 U	420 U	420 U
2-METHYLNAPHTHALENE	380 U	420 U	380 U	420 U	420 U
HEXACHLOROCYCLOPENTADIENE	380 U	420 U	380 U	420 U	420 U
2,4,6-TRICHLOROPHENOL	380 U	420 U	380 U	420 U	420 U
2,4,5-TRICHLOROPHENOL	910 U	1000 U	930 U	1000 U	1000 U
2-CHLORONAPHTHALENE	380 U	420 U	380 U	420 U	420 U
2-NITROANILINE	910 U	1000 U	930 U	1000 U	1000 U
DIMETHYLPHTHALATE	380 U	420 U	380 U	420 U	420 U
ACENAPHTHYLENE	380 U	420 U	380 U	420 U	420 U
2,6-DINITROTOLUENE	380 U	420 U	380 U	420 U	420 U
3-NITROANILINE	910 U	1000 U	930 U	1000 U	1000 U
ACENAPHTHENE	380 U	420 U	380 U	420 U	420 U
2,4-DINITROPHENOL	910 U	1000 U	930 U	1000 U	1000 U
4-NITROPHENOL	910 U	1000 U	930 U	1000 U	1000 U

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17TP05B-03	17TP06A-03	17TP06B-03	17TP07A-08	17TP07B-08
DATE SAMPLED	11/02/96	11/03/96	11/03/96	11/02/96	11/02/96
DEPTH	2-3'	2-3'	2-3'	7-8'	7-8'
SEMIVOLATILES (ug/kg) (cont)					
DIBENZOFURAN	380 U	420 U	380 U	420 U	420 U
2,4-DINITROTOLUENE	380 U	420 U	380 U	420 U	420 U
DIETHYLPHTHALATE	380 U	420 U	380 U	420 U	420 U
4-CHLOROPHENYL-PHENYLETHER	380 U	420 U	380 U	420 U	420 U
FLUORENE	380 U	420 U	380 U	420 U	420 U
4-NITROANILINE	910 U	1000 U	930 U	1000 U	1000 U
4,6-DINITRO-2-METHYLPHENOL	910 U	1000 U	930 U	1000 U	1000 U
N-NITROSODIPHENYLAMINE (1)	380 U	420 U	380 U	420 U	420 U
4-BROMOPHENYL-PHENYLETHER	380 U	420 U	380 U	420 U	420 U
HEXACHLOROBENZENE	380 U	420 U	380 U	420 U	420 U
PENTACHLOROPHENOL	910 U	1000 U	930 U	1000 U	1000 U
PHENANTHRENE	380 U	420 U	380 U	420 U	420 U
ANTHRACENE	380 U	420 U	380 U	420 U	420 U
CARBAZOLE	380 U	420 U	380 U	420 U	420 U
DI-N-BUTYLPHTHALATE	380 U	420 U	380 U	420 U	420 U
FLUORANTHENE	380 U	420 U	380 U	420 U	420 U
PYRENE	380 U	420 U	380 U	420 U	420 U
BUTYLBENZYLPHTHALATE	380 U	420 U	380 U	420 U	420 U
3,3'-DICHLOROBENZIDINE	380 U	420 U	380 U	420 U	420 U
BENZO(A)ANTHRACENE	380 U	420 U	380 U	420 U	420 U
CHRYSENE	380 U	420 U	380 U	420 U	420 U
BIS(2-ETHYLHEXYL)PHTHALATE	380 U	420 U	380 U	420 U	420 U
DI-N-OCTYLPHTHALATE	380 U	420 U	380 U	420 U	420 U
BENZO(B)FLUORANTHENE	380 U	420 U	380 U	420 U	420 U
BENZO(K)FLUORANTHENE	380 U	420 U	380 U	420 U	420 U
BENZO(A)PYRENE	380 U	420 U	380 U	420 U	420 U
INDENO(1,2,3-CD)PYRENE	380 U	420 U	380 U	420 U	420 U
DIBENZO(A,H)ANTHRACENE	380 U	420 U	380 U	420 U	420 U
BENZO(G,H,I)PERYLENE	380 U	420 U	380 U	420 U	420 U

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17TP05B-03	17TP06A-03	17TP06B-03	17TP07A-08	17TP07B-08
DATE SAMPLED	11/02/96	11/03/96	11/03/96	11/02/96	11/02/96
DEPTH	2-3'	2-3'	2-3'	7-8'	7-8'
PESTICIDES/PCBS (ug/kg)					
ALPHA-BHC	1.9 U	2.2 U	9.7 U	10 U	2.1 U
BETA-BHC	1.9 U	2.2 U	9.7 U	10 U	2.1 U
DELTA-BHC	1.9 U	2.2 U	9.7 U	10 U	2.1 U
HEPTACHLOR	1.9 U	2.2 U	9.7 U	10 U	2.1 U
ALDRIN	1.9 U	2.2 U	9.7 U	10 U	2.1 U
HEPTACHLOR EPOXIDE	1.9 U	2.2 U	9.7 U	10 U	2.1 U
ENDOSULFAN I	1.9 U	2.2 U	9.7 U	10 U	2.1 U
DIELDRIN	3.8 U	4.3 U	19 U	21 U	4.2 U
4,4'-DDE	3.8 U	4.3 U	19 U	21 U	4.2 U
ENDRIN	3.8 U	4.3 U	19 U	21 U	4.2 U
ENDOSULFAN II	3.8 U	4.3 U	19 U	21 U	4.2 U
4,4'-DDD	3.8 U	4.3 U	19 U	21 U	4.2 U
ENDOSULFAN SULFATE	3.8 U	4.3 U	19 U	21 U	4.2 U
4,4'-DDT	3.8 U	4.3 U	19 U	21 U	4.2 U
METHOXYCHLOR	19 U	0.85 J	97 U	100 U	1.2 J
ENDRIN KETONE	3.8 U	4.3 U	19 U	21 U	4.2 U
ENDRIN ALDEHYDE	3.8 U	4.3 U	19 U	21 U	4.2 U
ALPHA-CHLORDANE	1.9 U	2.2 U	9.7 U	10 U	2.1 U
GAMMA-CHLORDANE	1.9 U	2.2 U	9.7 U	10 U	2.1 U
TOXAPHENE	190 U	220 U	970 U	1000 U	210 U
AROCLOR-1016	38 U	43 U	190 U	210 U	42 U
AROCLOR-1221	76 U	86 U	390 U	420 U	85 U
AROCLOR-1232	38 U	43 U	190 U	210 U	42 U
AROCLOR-1242	38 U	43 U	190 U	210 U	42 U
AROCLOR-1248	38 U	43 U	190 U	210 U	42 U
AROCLOR-1254	38 U	43 U	190 U	210 U	42 U
AROCLOR-1260	38 U	43 U	190 U	210 U	42 U

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17TP05B-03	17TP06A-03	17TP06B-03	17TP07A-08	17TP07B-08
DATE SAMPLED	11/02/96	11/03/96	11/03/96	11/02/96	11/02/96
DEPTH	2-3'	2-3'	2-3'	7-8'	7-8'
EXPLOSIVES (mg/kg)					
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DNT/2,6-DNT 26	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
AMINO-DNTS	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRYL	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/kg)								
CHLOROMETHANE	11 U	13 U	ND	ND		0/11	NA	NA
BROMOMETHANE	11 U	13 U	ND	ND		0/11	NA	NA
VINYL CHLORIDE	11 U	13 U	ND	ND		0/11	NA	NA
CHLOROETHANE	11 U	13 U	ND	ND		0/11	NA	NA
METHYLENE CHLORIDE	11 U	13 U	ND	ND		0/11	NA	NA
ACETONE	11 U	38 B	ND	ND		0/11	NA	NA
CARBON DISULFIDE	11 U	13 U	ND	ND		0/11	NA	NA
1,1-DICHLOROETHENE	11 U	13 U	ND	ND		0/11	NA	NA
1,1-DICHLOROETHANE	11 U	13 U	ND	ND		0/11	NA	NA
1,2-DICHLOROETHENE (TOTAL)	11 U	13 U	ND	ND		0/11	NA	NA
CHLOROFORM	11 U	13 U	ND	ND		0/11	NA	NA
1,2-DICHLOROETHANE	11 U	13 U	ND	ND		0/11	NA	NA
2-BUTANONE	11 U	13 U	ND	ND		0/11	NA	NA
1,1,1-TRICHLOROETHANE	11 U	13 U	ND	ND		0/11	NA	NA
CARBON TETRACHLORIDE	11 U	13 U	ND	ND		0/11	NA	NA
BROMODICHLOROMETHANE	11 U	13 U	ND	ND		0/11	NA	NA
1,2-DICHLOROPROPANE	11 U	13 U	ND	ND		0/11	NA	NA
CIS-1,3-DICHLOROPROPENE	11 U	13 U	ND	ND		0/11	NA	NA
TRICHLOROETHENE	11 U	13 U	ND	ND		0/11	NA	NA
DIBROMOCHLOROMETHANE	11 U	13 U	ND	ND		0/11	NA	NA
1,1,2-TRICHLOROETHANE	11 U	13 U	ND	ND		0/11	NA	NA
BENZENE	11 U	13 U	ND	ND		0/11	NA	NA
TRANS-1,3-DICHLOROPROPENE	11 U	13 U	ND	ND		0/11	NA	NA
BROMOFORM	11 U	13 U	ND	ND		0/11	NA	NA
4-METHYL-2-PENTANONE	11 U	13 U	ND	ND		0/11	NA	NA
2-HEXANONE	11 U	13 U	ND	ND		0/11	NA	NA
TETRACHLOROETHENE	11 U	13 U	ND	ND		0/11	NA	NA
1,1,2,2-TETRACHLOROETHANE	11 U	13 U	ND	ND		0/11	NA	NA
TOLUENE	11 U	13 U	ND	ND		0/11	NA	NA
CHLOROBENZENE	11 U	13 U	ND	ND		0/11	NA	NA
ETHYLBENZENE	11 U	13 U	ND	ND		0/11	NA	NA
STYRENE	11 U	13 U	ND	ND		0/11	NA	NA
XYLENES (TOTAL)	11 U	13 U	ND	ND		0/11	NA	NA

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg)								
PHENOL	360 U	440 U	ND	ND		0/11	NA	NA
BIS(2-CHLOROETHYL)ETHER	360 U	440 U	ND	ND		0/11	NA	NA
2-CHLOROPHENOL	360 U	440 U	ND	ND		0/11	NA	NA
1,3-DICHLOROBENZENE	360 U	440 U	ND	ND		0/11	NA	NA
1,4-DICHLOROBENZENE	360 U	440 U	ND	ND		0/11	NA	NA
1,2-DICHLOROBENZENE	360 U	440 U	ND	ND		0/11	NA	NA
2-METHYLPHENOL	360 U	440 U	ND	ND		0/11	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	360 U	440 U	ND	ND		0/11	NA	NA
4-METHYLPHENOL	360 U	440 U	ND	ND		0/11	NA	NA
HEXACHLOROETHANE	360 U	440 U	ND	ND		0/11	NA	NA
NITROBENZENE	360 U	440 U	ND	ND		0/11	NA	NA
ISOPHORONE	360 U	440 U	ND	ND		0/11	NA	NA
2-NITROPHENOL	360 U	440 U	ND	ND		0/11	NA	NA
2,4-DIMETHYLPHENOL	360 U	440 U	ND	ND		0/11	NA	NA
BIS(2-CHLOROETHOXY)METHANE	360 U	440 U	ND	ND		0/11	NA	NA
2,4-DICHLOROPHENOL	360 U	440 U	ND	ND		0/11	NA	NA
1,2,4-TRICHLOROBENZENE	360 U	440 U	ND	ND		0/11	NA	NA
NAPHTHALENE	360 U	440 U	46 J	46 J	17TP03B-01	1/11	46.00	46.00
4-CHLOROANILINE	360 U	440 U	ND	ND		0/11	NA	NA
HEXACHLOROBUTADIENE	360 U	440 U	ND	ND		0/11	NA	NA
4-CHLORO-3-METHYLPHENOL	360 U	440 U	ND	ND		0/11	NA	NA
2-METHYLNAPHTHALENE	360 U	440 U	ND	ND		0/11	NA	NA
HEXACHLOROCYCLOPENTADIENE	360 U	440 U	ND	ND		0/11	NA	NA
2,4,6-TRICHLOROPHENOL	360 U	440 U	ND	ND		0/11	NA	NA
2,4,5-TRICHLOROPHENOL	870 U	1100 U	ND	ND		0/11	NA	NA
2-CHLORONAPHTHALENE	360 U	440 U	ND	ND		0/11	NA	NA
2-NITROANILINE	870 U	1100 U	ND	ND		0/11	NA	NA
DIMETHYLPHTHALATE	360 U	440 U	ND	ND		0/11	NA	NA
ACENAPHTHYLENE	360 U	440 U	ND	ND		0/11	NA	NA
2,6-DINITROTOLUENE	360 U	440 U	ND	ND		0/11	NA	NA
3-NITROANILINE	870 U	1100 U	ND	ND		0/11	NA	NA
ACENAPHTHENE	360 U	440 U	84 J	84 J	17TP03B-01	1/11	84.00	84.00
2,4-DINITROPHENOL	870 U	1100 U	ND	ND		0/11	NA	NA
4-NITROPHENOL	870 U	1100 U	ND	ND		0/11	NA	NA

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg) (cont)								
DIBENZOFURAN	360 U	440 U	44 J	44 J	17TP03B-01	1/11	44.00	44.00
2,4-DINITROTOLUENE	360 U	440 U	ND	ND		0/11	NA	NA
DIETHYLPHTHALATE	360 U	440 U	ND	ND		0/11	NA	NA
4-CHLOROPHENYL-PHENYLETHER	360 U	440 U	ND	ND		0/11	NA	NA
FLUORENE	360 U	440 U	66 J	66 J	17TP03B-01	1/11	66.00	66.00
4-NITROANILINE	870 U	1100 U	ND	ND		0/11	NA	NA
4,6-DINITRO-2-METHYLPHENOL	870 U	1100 U	ND	ND		0/11	NA	NA
N-NITROSODIPHENYLAMINE (1)	360 U	440 U	ND	ND		0/11	NA	NA
4-BROMOPHENYL-PHENYLETHER	360 U	440 U	ND	ND		0/11	NA	NA
HEXACHLOROBENZENE	360 U	440 U	ND	ND		0/11	NA	NA
PENTACHLOROPHENOL	870 U	1100 U	ND	ND		0/11	NA	NA
PHENANTHRENE	360 U	440 U	55 J	590	17TP03B-01	2/11	322.50	322.50
ANTHRACENE	360 U	440 U	76 J	76 J	17TP03B-01	1/11	76.00	76.00
CARBAZOLE	360 U	440 U	55 J	55 J	17TP03B-01	1/11	55.00	55.00
DI-N-BUTYLPHTHALATE	360 U	440 U	ND	ND		0/11	NA	NA
FLUORANTHENE	360 U	440 U	92 J	580	17TP03B-01	2/11	336.00	336.00
PYRENE	360 U	440 U	140 J	440	17TP03B-01	2/11	290.00	290.00
BUTYLBENZYLPHTHALATE	360 U	440 U	ND	ND		0/11	NA	NA
3,3'-DICHLOROBENZIDINE	360 U	440 U	ND	ND		0/11	NA	NA
BENZO(A)ANTHRACENE	360 U	440 U	55 J	260 J	17TP03B-01	2/11	157.50	157.50
CHRYSENE	360 U	440 U	61 J	240 J	17TP03B-01	2/11	150.50	150.50
BIS(2-ETHYLHEXYL)PHTHALATE	360 U	440 U	ND	ND		0/11	NA	NA
DI-N-OCTYLPHTHALATE	360 U	440 U	ND	ND		0/11	NA	NA
BENZO(B)FLUORANTHENE	360 U	440 U	100 J	300 J	17TP03B-01	2/11	200.00	200.00
BENZO(K)FLUORANTHENE	360 U	440 U	53 J	100 J	17TP03B-01	2/11	76.50	76.50
BENZO(A)PYRENE	360 U	440 U	91 J	220 J	17TP03B-01	2/11	155.50	155.50
INDENO(1,2,3-CD)PYRENE	360 U	440 U	76 J	120 J	17TP03B-01	2/11	98.00	98.00
DIBENZO(A,H)ANTHRACENE	360 U	440 U	ND	ND		0/11	NA	NA
BENZO(G,H,I)PERYLENE	360 U	440 U	120 J	130 J	17TP03B-01	2/11	125.00	125.00

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDES/PCBS (ug/kg)								
ALPHA-BHC	1.8 U	11 U	ND	ND		0/11	NA	NA
BETA-BHC	1.8 U	11 U	ND	ND		0/11	NA	NA
DELTA-BHC	1.8 U	11 U	ND	ND		0/11	NA	NA
HEPTACHLOR	1.8 U	11 U	ND	ND		0/11	NA	NA
ALDRIN	1.8 U	11 U	ND	ND		0/11	NA	NA
HEPTACHLOR EPOXIDE	1.8 U	11 U	ND	ND		0/11	NA	NA
ENDOSULFAN I	1.8 U	11 U	ND	ND		0/11	NA	NA
DIELDRIN	3.6 U	21 U	0.34 J	0.34 J	17TP05A-03	1/11	0.34	0.34
4,4'-DDE	3.6 U	21 U	0.25 J	0.25 J	17TP05A-03	1/11	0.25	0.25
ENDRIN	3.6 U	21 U	0.4 J	0.4 J	17TP05A-03	1/11	0.40	0.40
ENDOSULFAN II	3.6 U	21 U	ND	ND		0/11	NA	NA
4,4'-DDD	3.6 U	21 U	ND	ND		0/11	NA	NA
ENDOSULFAN SULFATE	3.6 U	21 U	ND	ND		0/11	NA	NA
4,4'-DDT	3.6 U	21 U	0.45 J	25	17TP05A-03	2/11	12.73	12.73
METHOXYCHLOR	19 U	110 U	0.56 J	89	17TP05A-03	6/11	15.61	1.03
ENDRIN KETONE	3.6 U	21 U	ND	ND		0/11	NA	NA
ENDRIN ALDEHYDE	3.6 U	21 U	ND	ND		0/11	NA	NA
ALPHA-CHLORDANE	1.8 U	11 U	ND	ND		0/11	NA	NA
GAMMA-CHLORDANE	1.8 U	11 U	ND	ND		0/11	NA	NA
TOXAPHENE	180 U	1100 U	ND	ND		0/11	NA	NA
AROCLOR-1016	36 U	210 U	ND	ND		0/11	NA	NA
AROCLOR-1221	73 U	420 U	ND	ND		0/11	NA	NA
AROCLOR-1232	36 U	210 U	ND	ND		0/11	NA	NA
AROCLOR-1242	36 U	210 U	ND	ND		0/11	NA	NA
AROCLOR-1248	36 U	210 U	ND	ND		0/11	NA	NA
AROCLOR-1254	36 U	210 U	ND	ND		0/11	NA	NA
AROCLOR-1260	36 U	210 U	ND	ND		0/11	NA	NA

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
EXPLOSIVES (mg/kg)								
1,3-DINITROBENZENE	0.25 U	0.25 U	ND	ND		0/11	NA	NA
2,4-DNT/2,6-DNT 26	0.25 U	0.25 U	ND	ND		0/11	NA	NA
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	ND	ND		0/11	NA	NA
HMX	0.5 U	0.5 U	ND	ND		0/11	NA	NA
NITROBENZENE	0.25 U	0.25 U	ND	ND		0/11	NA	NA
2-NITROTOLUENE	0.25 U	0.25 U	ND	ND		0/11	NA	NA
3-NITROTOLUENE	0.25 U	0.25 U	ND	ND		0/11	NA	NA
AMINO-DNTS	0.25 U	0.25 U	ND	ND		0/11	NA	NA
RDX	0.5 U	0.5 U	ND	ND		0/11	NA	NA
TETRYL	0.65 U	0.65 U	ND	ND		0/11	NA	NA
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	ND	ND		0/11	NA	NA

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17TP01A-07	17TP01B-07	17TP02A-07	17TP03B-01	17TP03B-01D	17TP05A-03
DATE SAMPLED	11/02/96	11/02/96	11/03/96	11/03/96	11/03/96	11/02/96
DEPTH	6-7'	6-7'	6-7'	0.5-1'	0.5-1'	2-3'
TOTAL INORGANICS (mg/kg)						
ALUMINUM	2360	3660	3110	5560	6150	2890
ANTIMONY	0.8 UL	0.65 UL	0.7 UL	0.72 UL	0.77 UL	0.71 UL
ARSENIC	1.5	0.9	1.3	2.2	2.9	3.3
BARIUM	3.3	13.6	5.9	23.6	25.4	5.3
BERYLLIUM	0.27 U	0.22 U	0.23 U	0.24 U	0.26 U	0.24 U
CADMIUM	0.27 U	0.22 U	0.23 U	0.24 U	0.26 U	0.24 U
CALCIUM	94	168	165	2130	1970	122
CHROMIUM	5	3.5	4.7	7.9	9.8	9
COBALT	0.88	0.44 U	0.47	1.4	1.6	0.54
COPPER	0.79	1.1	1.2	2.9	2.8	1.3
IRON	3080	2870	2220	6290	7500	7160
LEAD	1.8 L	2.9	2.7	7.7	7.7	3.4
MAGNESIUM	352	251	188	633	794	432
MANGANESE	3.9	14.6	3.1	60.2	60.1	7.1
MERCURY	0.07 U	0.05 U	0.06 U	0.06 U	0.07	0.06 U
NICKEL	1.6	1.1	1.4	3.5	3.6	1.4
POTASSIUM	460	95.1	134	405	586	723
SELENIUM	0.8 UL	0.65 UL	0.7 UL	0.72 UL	0.77 UL	0.77 L
SILVER	0.27 U	0.22 U	0.23 U	0.24 U	0.26 U	0.24 U
SODIUM	57 B	33.3 B	29.2 U	51.7 B	35.3 B	29.7 U
THALLIUM	1.6 U	1.3 U	1.4 U	1.4 U	1.5 U	1.4 U
VANADIUM	4.4	6.2	5.4	12.2	13.4	11.1
ZINC	4.4 K	4 K	2.9 K	17	17.1	5.7 K
CYANIDE	0.2 U	0.16 U	0.17 U	0.18 U	0.19 U	0.17 U

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17TP05B-03	17TP06A-03	17TP06B-03	17TP07A-08	17TP07B-08
DATE SAMPLED	11/02/96	11/03/96	11/03/96	11/02/96	11/02/96
DEPTH	2-3'	2-3'	2-3'	7-8'	7-8'
TOTAL INORGANICS (mg/kg)					
ALUMINUM	1870	3350	2400	3930	1370
ANTIMONY	0.68 UL	0.77 UL	0.7 UL	0.81 UL	0.77 U
ARSENIC	2.4	3.5	2.9	3.3	1.5
BARIUM	5.6	4.9	5.5	9.3	5.6
BERYLLIUM	0.23 U	0.26 U	0.23 U	0.27 U	0.26 U
CADMIUM	0.23 U	0.26 U	0.23 U	0.27 U	0.26 U
CALCIUM	216	82.3	166	67.8	69.2 B
CHROMIUM	4.9	8.8	6.5	9.3	5.4
COBALT	0.75	0.83	0.47 U	3.3	3
COPPER	0.68	1.3	1.1	1.6	0.85 B
IRON	3600	5700	4670	4910	2100
LEAD	1.8	3.7	2.9	4.4	3.8
MAGNESIUM	354	464	363	525	263
MANGANESE	52.4	11.6	11.6	15.3	7.3
MERCURY	0.06 U	0.06 U	0.06 U	0.07 U	0.06 U
NICKEL	1.2	1.3	1.1	3.9	2.9
POTASSIUM	488	722	532	781	432
SELENIUM	0.68 UL	0.77 UL	0.7 UL	0.81 UL	0.77 U
SILVER	0.23 U	0.26 U	0.23 U	0.27 U	0.26 U
SODIUM	87.2 B	32.1 U	74.9 B	57.5 B	32.1 U
THALLIUM	1.4 U	1.5 U	1.4 U	1.6 U	1.5 U
VANADIUM	6	11	8.3	11.8	7.3
ZINC	28.6	6.3 K	6 K	15	6.8 K
CYANIDE	0.17 U	0.19 U	0.17 U	0.2 U	0.18 U

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
TOTAL INORGANICS (mg/kg)								
ALUMINUM	NA	NA	1370	6150	17TP03B-01D	11/11	3331.82	3110.00
ANTIMONY	0.65 UL	0.81 UL	ND	ND		0/11	NA	NA
ARSENIC	NA	NA	0.9	3.5	17TP06A-03	11/11	2.34	2.40
BARIUM	NA	NA	3.3	25.4	17TP03B-01D	11/11	9.82	5.60
BERYLLIUM	0.22 U	0.27 U	ND	ND		0/11	NA	NA
CADMIUM	0.22 U	0.27 U	ND	ND		0/11	NA	NA
CALCIUM	69.2 B	69.2 B	67.8	2130	17TP03B-01	10/11	518.11	165.50
CHROMIUM	NA	NA	3.5	9.8	17TP03B-01D	11/11	6.80	6.50
COBALT	0.44 U	0.47 U	0.47	3.3	17TP07A-08	9/11	1.42	0.88
COPPER	0.85 B	0.85 B	0.68	2.9	17TP03B-01	10/11	1.48	1.25
IRON	NA	NA	2100	7500	17TP03B-01D	11/11	4554.55	4670.00
LEAD	NA	NA	1.8 L	7.7	17TP03B-01D	11/11	3.89	3.40
MAGNESIUM	NA	NA	188	794	17TP03B-01D	11/11	419.91	363.00
MANGANESE	NA	NA	3.1	60.2	17TP03B-01	11/11	22.47	11.60
MERCURY	0.05 U	0.07 U	0.07	0.07	17TP03B-01D	1/11	0.07	0.07
NICKEL	NA	NA	1.1	3.9	17TP07A-08	11/11	2.09	1.40
POTASSIUM	NA	NA	95.1	781	17TP07A-08	11/11	487.10	488.00
SELENIUM	0.65 UL	0.81 UL	0.77 L	0.77 L	17TP05A-03	1/11	0.77	0.77
SILVER	0.22 U	0.27 U	ND	ND		0/11	NA	NA
SODIUM	29.2 U	87.2 B	ND	ND		0/11	NA	NA
THALLIUM	1.3 U	1.6 U	ND	ND		0/11	NA	NA
VANADIUM	NA	NA	4.4	13.4	17TP03B-01D	11/11	8.83	8.30
ZINC	NA	NA	2.9 K	28.6	17TP05B-03	11/11	10.35	6.30
CYANIDE	0.16 U	0.2 U	ND	ND		0/11	NA	NA

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17TP01A-07	17TP01B-07	17TP02A-07	17TP03B-01	17TP03B-01D	17TP05A-03
DATE SAMPLED	11/02/96	11/02/96	11/03/96	11/03/96	11/03/96	11/02/96
DEPTH	6-7'	6-7'	6-7'	0.5-1'	0.5-1'	2-3'
ENGINEERING						
PERCENT MOISTURE (%)	24.9	8.1	14.5	17.1	21.9	15.7
TOTAL ORGANIC CARBON (mg/kg)	NA	NA	120 U	21000	NA	NA
CATION EXCHANGE CAPACITY (mg/k	NA	NA	3000	3100	NA	NA

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17TP05B-03	17TP06A-03	17TP06B-03	17TP07A-08	17TP07B-08
DATE SAMPLED	11/02/96	11/03/96	11/03/96	11/02/96	11/02/96
DEPTH	2-3'	2-3'	2-3'	7-8'	7-8'
ENGINEERING					
PERCENT MOISTURE (%)	12.3	22.2	14.2	20.5	22
TOTAL ORGANIC CARBON (mg/kg)	NA	NA	NA	NA	NA
CATION EXCHANGE CAPACITY (mg/k	NA	NA	NA	NA	NA

SUBSURFACE SOIL - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED DEPTH	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
ENGINEERING								
PERCENT MOISTURE (%)	NA	NA	8.1	24.9	17TP01A-07	11/11	17.58	17.10
TOTAL ORGANIC CARBON (mg/kg)	120 U	120 U	21000	21000	17TP03B-01	1/2	21000.00	21000.00
CATION EXCHANGE CAPACITY (mg/k	NA	NA	3000	3100	17TP03B-01	2/2	3050.00	3050.00

GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17GW01-003	17GW02-003	17GW10-002	17GW16-002	17GW16D-002
DATE SAMPLED	11/15/96	11/15/96	11/15/96	11/15/96	11/15/96
VOLATILES (ug/L)					
CHLOROMETHANE	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U	10 U	10 U
CHLOROETHANE	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	10 U	10 U	10 U	10 U	10 U
ACETONE	10 U	9 B	10 U	10 U	10 U
CARBON DISULFIDE	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	10 U	10 U	10 U
CHLOROFORM	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	10 U	10 U	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U
BENZENE	10 U	10 U	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U
BROMOFORM	10 U	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U	10 U	10 U
TOLUENE	10 U	10 U	10 U	10 U	10 U
CHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
ETHYLBENZENE	10 U	10 U	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U	10 U	10 U
XYLENES (TOTAL)	10 U	10 U	10 U	10 U	10 U

GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17GW01-003	17GW02-003	17GW10-002	17GW16-002	17GW16D-002
DATE SAMPLED	11/15/96	11/15/96	11/15/96	11/15/96	11/15/96
SEMIVOLATILES (ug/L)					
PHENOL	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL)ETHER	10 U	10 U	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U	10 U	10 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
2-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U	10 U	10 U
4-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 U	10 U	10 U	10 U
NITROBENZENE	10 U	10 U	10 U	10 U	10 U
ISOPHORONE	10 U	10 U	10 U	10 U	10 U
2-NITROPHENOL	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	10 U	10 U	10 U	10 U	10 U
4-CHLOROANILINE	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U
2-METHYLNAPHTHALENE	10 U	10 U	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	25 U	25 U	25 U	25 U	25 U
2-CHLORONAPHTHALENE	10 U	10 U	10 U	10 U	10 U
2-NITROANILINE	25 U	25 U	25 U	25 U	25 U
DIMETHYLPHTHALATE	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U
3-NITROANILINE	25 U	25 U	25 U	25 U	25 U
ACENAPHTHENE	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	25 U	25 U	25 U	25 U	25 U
4-NITROPHENOL	25 U	25 U	25 U	25 U	25 U
DIBENZOFURAN	10 U	10 U	10 U	10 U	10 U

GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17GW01-003	17GW02-003	17GW10-002	17GW16-002	17GW16D-002
DATE SAMPLED	11/15/96	11/15/96	11/15/96	11/15/96	11/15/96
SEMIVOLATILES (ug/L) (cont)					
2,4-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U
DIETHYLPHTHALATE	10 U	10 U	10 U	10 U	10 U
4-CHLOROPHENYL-PHENYLETHER	10 U	10 U	10 U	10 U	10 U
FLUORENE	10 U	10 U	10 U	10 U	10 U
4-NITROANILINE	25 U	25 U	25 U	25 U	25 U
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	25 U	25 U	25 U
N-NITROSODIPHENYLAMINE (1)	10 U	10 U	10 U	10 U	10 U
4-BROMOPHENYL-PHENYLETHER	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	25 U	25 U	25 U	25 U	25 U
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	10 U	10 U	10 U	10 U	10 U
CARBAZOLE	10 U	10 U	10 U	10 U	10 U
DI-N-BUTYLPHTHALATE	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	10 U	10 U	10 U	10 U	10 U
PYRENE	10 U	10 U	10 U	10 U	10 U
BUTYLBENZYLPHTHALATE	10 U	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10 U	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U	10 U	10 U
DI-N-OCTYLPHTHALATE	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10 U	10 U	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 U	10 U	10 U

GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17GW01-003	17GW02-003	17GW10-002	17GW16-002	17GW16D-002
DATE SAMPLED	11/15/96	11/15/96	11/15/96	11/15/96	11/15/96
PESTICIDES/PCBS (ug/L)					
ALPHA-BHC	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
BETA-BHC	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
DELTA-BHC	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
HEPTACHLOR	0.05 U	0.05 U	0.05 U	0.01 B	0.0032 B
ALDRIN	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
HEPTACHLOR EPOXIDE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ENDOSULFAN I	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
DIELDRIN	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDE	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN II	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDD	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN SULFATE	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDT	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
METHOXYCHLOR	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ENDRIN KETONE	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN ALDEHYDE	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ALPHA-CHLORDANE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
GAMMA-CHLORDANE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
TOXAPHENE	5 U	5 U	5 U	5 U	5 U
AROCLOR-1016	1 U	1 U	1 U	1 U	1 U
AROCLOR-1221	2 U	2 U	2 U	2 U	2 U
AROCLOR-1232	1 U	1 U	1 U	1 U	1 U
AROCLOR-1242	1 U	1 U	1 U	1 U	1 U
AROCLOR-1248	1 U	1 U	1 U	1 U	1 U
AROCLOR-1254	1 U	1 U	1 U	1 U	1 U
AROCLOR-1260	1 U	1 U	1 U	1 U	1 U

GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17GW01-003	17GW02-003	17GW10-002	17GW16-002	17GW16D-002
DATE SAMPLED	11/15/96	11/15/96	11/15/96	11/15/96	11/15/96
EXPLOSIVES (ug/L)					
1,3-DINITROBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,4-DNT/2,6-DNT 26	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,4,6-TRINITROTOLUENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
HMX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
NITROBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-NITROTOLUENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
3-NITROTOLUENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
AMINO-DNTS	0.2 U	0.2 U	0.2 U	1.3	1.2
RDX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRYL	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3,5-TRINITROBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/L)								
CHLOROMETHANE	10 U	10 U	ND	ND		0/5	NA	NA
BROMOMETHANE	10 U	10 U	ND	ND		0/5	NA	NA
VINYL CHLORIDE	10 U	10 U	ND	ND		0/5	NA	NA
CHLOROETHANE	10 U	10 U	ND	ND		0/5	NA	NA
METHYLENE CHLORIDE	10 U	10 U	ND	ND		0/5	NA	NA
ACETONE	9 B	10 U	ND	ND		0/5	NA	NA
CARBON DISULFIDE	10 U	10 U	ND	ND		0/5	NA	NA
1,1-DICHLOROETHENE	10 U	10 U	ND	ND		0/5	NA	NA
1,1-DICHLOROETHANE	10 U	10 U	ND	ND		0/5	NA	NA
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	ND	ND		0/5	NA	NA
CHLOROFORM	10 U	10 U	ND	ND		0/5	NA	NA
1,2-DICHLOROETHANE	10 U	10 U	ND	ND		0/5	NA	NA
2-BUTANONE	10 U	10 U	ND	ND		0/5	NA	NA
1,1,1-TRICHLOROETHANE	10 U	10 U	ND	ND		0/5	NA	NA
CARBON TETRACHLORIDE	10 U	10 U	ND	ND		0/5	NA	NA
BROMODICHLOROMETHANE	10 U	10 U	ND	ND		0/5	NA	NA
1,2-DICHLOROPROPANE	10 U	10 U	ND	ND		0/5	NA	NA
CIS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/5	NA	NA
TRICHLOROETHENE	10 U	10 U	ND	ND		0/5	NA	NA
DIBROMOCHLOROMETHANE	10 U	10 U	ND	ND		0/5	NA	NA
1,1,2-TRICHLOROETHANE	10 U	10 U	ND	ND		0/5	NA	NA
BENZENE	10 U	10 U	ND	ND		0/5	NA	NA
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/5	NA	NA
BROMOFORM	10 U	10 U	ND	ND		0/5	NA	NA
4-METHYL-2-PENTANONE	10 U	10 U	ND	ND		0/5	NA	NA
2-HEXANONE	10 U	10 U	ND	ND		0/5	NA	NA
TETRACHLOROETHENE	10 U	10 U	ND	ND		0/5	NA	NA
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	ND	ND		0/5	NA	NA
TOLUENE	10 U	10 U	ND	ND		0/5	NA	NA
CHLOROBENZENE	10 U	10 U	ND	ND		0/5	NA	NA
ETHYLBENZENE	10 U	10 U	ND	ND		0/5	NA	NA
STYRENE	10 U	10 U	ND	ND		0/5	NA	NA
XYLENES (TOTAL)	10 U	10 U	ND	ND		0/5	NA	NA

GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/L)								
PHENOL	10 U	10 U	ND	ND		0/5	NA	NA
BIS(2-CHLOROETHYL)ETHER	10 U	10 U	ND	ND		0/5	NA	NA
2-CHLOROPHENOL	10 U	10 U	ND	ND		0/5	NA	NA
1,3-DICHLOROBENZENE	10 U	10 U	ND	ND		0/5	NA	NA
1,4-DICHLOROBENZENE	10 U	10 U	ND	ND		0/5	NA	NA
1,2-DICHLOROBENZENE	10 U	10 U	ND	ND		0/5	NA	NA
2-METHYLPHENOL	10 U	10 U	ND	ND		0/5	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	ND	ND		0/5	NA	NA
4-METHYLPHENOL	10 U	10 U	ND	ND		0/5	NA	NA
HEXACHLOROETHANE	10 U	10 U	ND	ND		0/5	NA	NA
NITROBENZENE	10 U	10 U	ND	ND		0/5	NA	NA
ISOPHORONE	10 U	10 U	ND	ND		0/5	NA	NA
2-NITROPHENOL	10 U	10 U	ND	ND		0/5	NA	NA
2,4-DIMETHYLPHENOL	10 U	10 U	ND	ND		0/5	NA	NA
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	ND	ND		0/5	NA	NA
2,4-DICHLOROPHENOL	10 U	10 U	ND	ND		0/5	NA	NA
1,2,4-TRICHLOROBENZENE	10 U	10 U	ND	ND		0/5	NA	NA
NAPHTHALENE	10 U	10 U	ND	ND		0/5	NA	NA
4-CHLOROANILINE	10 U	10 U	ND	ND		0/5	NA	NA
HEXACHLOROBUTADIENE	10 U	10 U	ND	ND		0/5	NA	NA
4-CHLORO-3-METHYLPHENOL	10 U	10 U	ND	ND		0/5	NA	NA
2-METHYLNAPHTHALENE	10 U	10 U	ND	ND		0/5	NA	NA
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	ND	ND		0/5	NA	NA
2,4,6-TRICHLOROPHENOL	10 U	10 U	ND	ND		0/5	NA	NA
2,4,5-TRICHLOROPHENOL	25 U	25 U	ND	ND		0/5	NA	NA
2-CHLORONAPHTHALENE	10 U	10 U	ND	ND		0/5	NA	NA
2-NITROANILINE	25 U	25 U	ND	ND		0/5	NA	NA
DIMETHYLPHTHALATE	10 U	10 U	ND	ND		0/5	NA	NA
ACENAPHTHYLENE	10 U	10 U	ND	ND		0/5	NA	NA
2,6-DINITROTOLUENE	10 U	10 U	ND	ND		0/5	NA	NA
3-NITROANILINE	25 U	25 U	ND	ND		0/5	NA	NA
ACENAPHTHENE	10 U	10 U	ND	ND		0/5	NA	NA
2,4-DINITROPHENOL	25 U	25 U	ND	ND		0/5	NA	NA
4-NITROPHENOL	25 U	25 U	ND	ND		0/5	NA	NA
DIBENZOFURAN	10 U	10 U	ND	ND		0/5	NA	NA

GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/L) (cont)								
2,4-DINITROTOLUENE	10 U	10 U	ND	ND		0/5	NA	NA
DIETHYLPHTHALATE	10 U	10 U	ND	ND		0/5	NA	NA
4-CHLOROPHENYL-PHENYLETHER	10 U	10 U	ND	ND		0/5	NA	NA
FLUORENE	10 U	10 U	ND	ND		0/5	NA	NA
4-NITROANILINE	25 U	25 U	ND	ND		0/5	NA	NA
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	ND	ND		0/5	NA	NA
N-NITROSODIPHENYLAMINE (1)	10 U	10 U	ND	ND		0/5	NA	NA
4-BROMOPHENYL-PHENYLETHER	10 U	10 U	ND	ND		0/5	NA	NA
HEXACHLOROBENZENE	10 U	10 U	ND	ND		0/5	NA	NA
PENTACHLOROPHENOL	25 U	25 U	ND	ND		0/5	NA	NA
PHENANTHRENE	10 U	10 U	ND	ND		0/5	NA	NA
ANTHRACENE	10 U	10 U	ND	ND		0/5	NA	NA
CARBAZOLE	10 U	10 U	ND	ND		0/5	NA	NA
DI-N-BUTYLPHTHALATE	10 U	10 U	ND	ND		0/5	NA	NA
FLUORANTHENE	10 U	10 U	ND	ND		0/5	NA	NA
PYRENE	10 U	10 U	ND	ND		0/5	NA	NA
BUTYLBENZYLPHTHALATE	10 U	10 U	ND	ND		0/5	NA	NA
3,3'-DICHLOROBENZIDINE	10 U	10 U	ND	ND		0/5	NA	NA
BENZO(A)ANTHRACENE	10 U	10 U	ND	ND		0/5	NA	NA
CHRYSENE	10 U	10 U	ND	ND		0/5	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	ND	ND		0/5	NA	NA
DI-N-OCTYLPHTHALATE	10 U	10 U	ND	ND		0/5	NA	NA
BENZO(B)FLUORANTHENE	10 U	10 U	ND	ND		0/5	NA	NA
BENZO(K)FLUORANTHENE	10 U	10 U	ND	ND		0/5	NA	NA
BENZO(A)PYRENE	10 U	10 U	ND	ND		0/5	NA	NA
INDENO(1,2,3-CD)PYRENE	10 U	10 U	ND	ND		0/5	NA	NA
DIBENZO(A,H)ANTHRACENE	10 U	10 U	ND	ND		0/5	NA	NA
BENZO(G,H,I)PERYLENE	10 U	10 U	ND	ND		0/5	NA	NA

GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDES/PCBS (ug/L)								
ALPHA-BHC	0.05 U	0.05 U	ND	ND		0/5	NA	NA
BETA-BHC	0.05 U	0.05 U	ND	ND		0/5	NA	NA
DELTA-BHC	0.05 U	0.05 U	ND	ND		0/5	NA	NA
HEPTACHLOR	0.0032 B	0.05 U	ND	ND		0/5	NA	NA
ALDRIN	0.05 U	0.05 U	ND	ND		0/5	NA	NA
HEPTACHLOR EPOXIDE	0.05 U	0.05 U	ND	ND		0/5	NA	NA
ENDOSULFAN I	0.05 U	0.05 U	ND	ND		0/5	NA	NA
DIELDRIN	0.1 U	0.1 U	ND	ND		0/5	NA	NA
4,4'-DDE	0.1 U	0.1 U	ND	ND		0/5	NA	NA
ENDRIN	0.1 U	0.1 U	ND	ND		0/5	NA	NA
ENDOSULFAN II	0.1 U	0.1 U	ND	ND		0/5	NA	NA
4,4'-DDD	0.1 U	0.1 U	ND	ND		0/5	NA	NA
ENDOSULFAN SULFATE	0.1 U	0.1 U	ND	ND		0/5	NA	NA
4,4'-DDT	0.1 U	0.1 U	ND	ND		0/5	NA	NA
METHOXYCHLOR	0.5 U	0.5 U	ND	ND		0/5	NA	NA
ENDRIN KETONE	0.1 U	0.1 U	ND	ND		0/5	NA	NA
ENDRIN ALDEHYDE	0.1 U	0.1 U	ND	ND		0/5	NA	NA
ALPHA-CHLORDANE	0.05 U	0.05 U	ND	ND		0/5	NA	NA
GAMMA-CHLORDANE	0.05 U	0.05 U	ND	ND		0/5	NA	NA
TOXAPHENE	5 U	5 U	ND	ND		0/5	NA	NA
AROCLOR-1016	1 U	1 U	ND	ND		0/5	NA	NA
AROCLOR-1221	2 U	2 U	ND	ND		0/5	NA	NA
AROCLOR-1232	1 U	1 U	ND	ND		0/5	NA	NA
AROCLOR-1242	1 U	1 U	ND	ND		0/5	NA	NA
AROCLOR-1248	1 U	1 U	ND	ND		0/5	NA	NA
AROCLOR-1254	1 U	1 U	ND	ND		0/5	NA	NA
AROCLOR-1260	1 U	1 U	ND	ND		0/5	NA	NA

GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ORGANIC COMPOUNDS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
EXPLOSIVES (ug/L)								
1,3-DINITROBENZENE	0.2 U	0.2 U	ND	ND		0/5	NA	NA
2,4-DNT/2,6-DNT 26	0.2 U	0.2 U	ND	ND		0/5	NA	NA
2,4,6-TRINITROTOLUENE	0.2 U	0.2 U	ND	ND		0/5	NA	NA
HMX	0.5 U	0.5 U	ND	ND		0/5	NA	NA
NITROBENZENE	0.2 U	0.2 U	ND	ND		0/5	NA	NA
2-NITROTOLUENE	0.2 U	0.2 U	ND	ND		0/5	NA	NA
3-NITROTOLUENE	0.2 U	0.2 U	ND	ND		0/5	NA	NA
AMINO-DNTS	0.2 U	0.2 U	1.2	1.3	17GW16-002	2/5	1.25	1.25
RDX	0.5 U	0.5 U	ND	ND		0/5	NA	NA
TETRYL	0.2 U	0.2 U	ND	ND		0/5	NA	NA
1,3,5-TRINITROBENZENE	0.2 U	0.2 U	ND	ND		0/5	NA	NA

GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17GW01-003	17GW02-003	17GW10-002	17GW16-002	17GW16D-002
DATE SAMPLED	11/15/96	11/15/96	11/15/96	11/15/96	11/15/96
TOTAL INORGANICS (ug/l)					
ALUMINUM	76.1 B	182	102 B	413	398
ANTIMONY	3 U	3 U	3 U	60 U	3 U
ARSENIC	3 U	15.2	3 U	4 B	3.6 B
BARIUM	4.9	5.9	58.4	16.8	17.3
BERYLLIUM	1 U	1 U	1 U	1 U	1 U
CADMIUM	1 U	1 U	1 U	1 U	1 U
CALCIUM	17800	9910	181000	12800	13400
CHROMIUM	1 UL	1 UL	1 UL	1 UL	1 UL
COBALT	2 U	2 U	2 U	2 U	2 U
COPPER	1 U	1 U	1 U	1.4 B	1 U
IRON	40 B	3680	698	222	229
LEAD	2 U	2 U	2 U	2 U	2 U
MAGNESIUM	324	407	8410	1410	1560
MANGANESE	4.8 B	124	71	4.1 B	4.5 B
MERCURY	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
NICKEL	2 U	2 U	2.2	2 U	2 U
POTASSIUM	313	370	3620	890	943
SELENIUM	3 UL	3 UL	3 UL	3 UL	3 UL
SILVER	1 U	1 U	1 U	1 U	1 U
SODIUM	6030	1700	14200	1280	1290
THALLIUM	6 U	6 U	6 U	6 U	6 U
VANADIUM	1 U	1.6	1 U	1.4	1
ZINC	7.2 B	8.3 B	6.3 B	8 B	12.6 B
CYANIDE	3 U	3 U	3 U	3 U	3 U

GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
TOTAL INORGANICS (ug/l)								
ALUMINUM	76.1 B	102 B	182	413	17GW16-002	3/5	331.00	398.00
ANTIMONY	3 U	60 U	ND	ND		0/5	NA	NA
ARSENIC	3 U	4 B	15.2	15.2	17GW02-003	1/5	15.20	15.20
BARIUM	NA	NA	4.9	58.4	17GW10-002	5/5	20.66	16.80
BERYLLIUM	1 U	1 U	ND	ND		0/5	NA	NA
CADMIUM	1 U	1 U	ND	ND		0/5	NA	NA
CALCIUM	NA	NA	9910	181000	17GW10-002	5/5	46982.00	13400.00
CHROMIUM	1 UL	1 UL	ND	ND		0/5	NA	NA
COBALT	2 U	2 U	ND	ND		0/5	NA	NA
COPPER	1 U	1.4 B	ND	ND		0/5	NA	NA
IRON	40 B	40 B	222	3680	17GW02-003	4/5	1207.25	463.50
LEAD	2 U	2 U	ND	ND		0/5	NA	NA
MAGNESIUM	NA	NA	324	8410	17GW10-002	5/5	2422.20	1410.00
MANGANESE	4.1 B	4.8 B	71	124	17GW02-003	2/5	97.50	97.50
MERCURY	0.1 U	0.1 U	ND	ND		0/5	NA	NA
NICKEL	2 U	2 U	2.2	2.2	17GW10-002	1/5	2.20	2.20
POTASSIUM	NA	NA	313	3620	17GW10-002	5/5	1227.20	890.00
SELENIUM	3 UL	3 UL	ND	ND		0/5	NA	NA
SILVER	1 U	1 U	ND	ND		0/5	NA	NA
SODIUM	NA	NA	1280	14200	17GW10-002	5/5	4900.00	1700.00
THALLIUM	6 U	6 U	ND	ND		0/5	NA	NA
VANADIUM	1 U	1 U	1	1.6	17GW02-003	3/5	1.33	1.40
ZINC	6.3 B	12.6 B	ND	ND		0/5	NA	NA
CYANIDE	3 U	3 U	ND	ND		0/5	NA	NA

GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
DISSOLVED INORGANICS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17GW01-003F	17GW02-003F	17GW10-002F	17GW16-002F	17GW16D-002F
DATE SAMPLED	11/15/96	11/15/96	11/15/96	11/15/96	11/15/96
DISSOLVED INORGANICS (ug/L)					
ALUMINUM	28 B	160	26 B	85.7 B	63 B
ANTIMONY	3 U	3 U	3 U	3 U	3 U
ARSENIC	3 U	13.9 B	3 U	3.7 B	3 U
BARIUM	3.7	6.3	58.5	16.2	16.3
BERYLLIUM	1 U	1 U	1 U	1 U	1 U
CADMIUM	1 U	1 U	1 U	1 U	1 U
CALCIUM	16500	9720	184000	12800	13600
CHROMIUM	1 UL	1 UL	1 UL	1 UL	1 UL
COBALT	2 U	2 U	2 U	2 U	2 U
COPPER	1 U	1 U	1.8 B	1 U	1 U
IRON	10 U	3620	529	43.3 B	36.5 B
LEAD	2 U	2 U	2 U	2 U	2 U
MAGNESIUM	296	404	8510	1390	1450
MANGANESE	4.6 B	122	73.4	4.7 B	3.7 B
MERCURY	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
NICKEL	2 U	2 U	2.7	2 U	2 U
POTASSIUM	304	365	3680	883	889
SELENIUM	3 UL	3 UL	3 UL	3 UL	3 UL
SILVER	1 U	1 U	1 U	1 U	1 U
SODIUM	5970	1660	14000	1330	1310
THALLIUM	6 U	6 U	6 U	6 U	6 U
VANADIUM	1 U	1.4	1 U	1 U	1 U
ZINC	5.3 B	6.5 B	16.2 B	8.8 B	7.1 B

GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
DISSOLVED INORGANICS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
DISSOLVED INORGANICS (ug/L)								
ALUMINUM	26 B	85.7 B	160	160	17GW02-003F	1/5	160.00	160.00
ANTIMONY	3 U	3 U	ND	ND		0/5	NA	NA
ARSENIC	3 U	13.9 B	ND	ND		0/5	NA	NA
BARIUM	NA	NA	3.7	58.5	17GW10-002F	5/5	20.20	16.20
BERYLLIUM	1 U	1 U	ND	ND		0/5	NA	NA
CADMIUM	1 U	1 U	ND	ND		0/5	NA	NA
CALCIUM	NA	NA	9720	184000	17GW10-002F	5/5	47324.00	13600.00
CHROMIUM	1 UL	1 UL	ND	ND		0/5	NA	NA
COBALT	2 U	2 U	ND	ND		0/5	NA	NA
COPPER	1 U	1.8 B	ND	ND		0/5	NA	NA
IRON	10 U	43.3 B	529	3620	17GW02-003F	2/5	2074.50	2074.50
LEAD	2 U	2 U	ND	ND		0/5	NA	NA
MAGNESIUM	NA	NA	296	8510	17GW10-002F	5/5	2410.00	1390.00
MANGANESE	3.7 B	4.7 B	73.4	122	17GW02-003F	2/5	97.70	97.70
MERCURY	0.1 U	0.1 U	ND	ND		0/5	NA	NA
NICKEL	2 U	2 U	2.7	2.7	17GW10-002F	1/5	2.70	2.70
POTASSIUM	NA	NA	304	3680	17GW10-002F	5/5	1224.20	883.00
SELENIUM	3 UL	3 UL	ND	ND		0/5	NA	NA
SILVER	1 U	1 U	ND	ND		0/5	NA	NA
SODIUM	NA	NA	1310	14000	17GW10-002F	5/5	4854.00	1660.00
THALLIUM	6 U	6 U	ND	ND		0/5	NA	NA
VANADIUM	1 U	1 U	1.4	1.4	17GW02-003F	1/5	1.40	1.40
ZINC	5.3 B	16.2 B	ND	ND		0/5	NA	NA

GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	17GW01-003	17GW02-003	17GW10-002	17GW16-002	17GW16D-002
DATE SAMPLED	11/15/96	11/15/96	11/15/96	11/15/96	11/15/96
ENGINEERING (ug/L)					
TOTAL DISSOLVED SOLIDS	52000	22000	570000	27000	NA
TOTAL SUSPENDED SOLIDS	4000 U	4000 U	4000 U	4000 U	NA
BROMIDE	NA	500 U	NA	500 U	NA
CHLORIDE	NA	1900	NA	1700	NA
ORTHO-PHOSPHATE	NA	500 U	NA	500 U	NA
SULFATE	NA	15500	NA	7000	NA
NITRATE/NITRITE	200	100 U	100 U	200	200
ETHENE	NA	0.4 U	NA	0.4 U	NA
ETHANE	NA	0.4 U	NA	0.4 U	NA
METHANE	NA	24	NA	3.6	NA
PROPANE	NA	0.64 U	NA	0.64 U	NA

GROUNDWATER - FREQUENCY OF DETECTION SUMMARY
ENGINEERING PARAMETERS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
ENGINEERING (ug/L)								
TOTAL DISSOLVED SOLIDS	NA	NA	22000	570000	17GW10-002	4/4	167750.00	39500.00
TOTAL SUSPENDED SOLIDS	4000 U	4000 U	ND	ND		0/4	NA	NA
BROMIDE	500 U	500 U	ND	ND		0/2	NA	NA
CHLORIDE	NA	NA	1700	1900	17GW02-003	2/2	1800.00	1800.00
ORTHO-PHOSPHATE	500 U	500 U	ND	ND		0/2	NA	NA
SULFATE	NA	NA	7000	15500	17GW02-003	2/2	11250.00	11250.00
NITRATE/NITRITE	100 U	100 U	200	200	17GW16D-002	3/5	200.00	200.00
ETHENE	0.4 U	0.4 U	ND	ND		0/2	NA	NA
ETHANE	0.4 U	0.4 U	ND	ND		0/2	NA	NA
METHANE	NA	NA	3.6	24	17GW02-003	2/2	13.80	13.80
PROPANE	0.64 U	0.64 U	ND	ND		0/2	NA	NA

APPENDIX G
ROUND TWO QA/QC RESULTS

DATA QUALIFIER DEFINITIONS AND NOTES

NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA

QUALIFIER DEFINITIONS

(NO CODE) = Confirmed identification.

B = Not detected substantially above the level reported in laboratory or field blanks.

J = Analyte present. Reported value may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.

N = Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.

R = Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.

U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.

UJ = Not detected. Quantitation limit may be inaccurate or imprecise.

UL = Not detected. Quantitation limit is probably higher.

NOTES

mg/kg = milligrams per kilogram.

mg/l = milligrams per liter.

ug/kg = micrograms per kilogram.

ug/l = micrograms per liter.

NA = Not analyzed.

FREQUENCY OF DETECTION SUMMARY
TRIP BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	11/22TB03	17/22TB04	22/21/11TB08	11/17TB09	4/11/21TB10
DATE SAMPLED	11/01/96	11/04/96	11/14/96	11/15/96	11/16/96
VOLATILES (ug/l)					
CHLOROMETHANE	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U	10 U	10 U
CHLOROETHANE	10 U	10 UJ	10 U	10 U	10 U
METHYLENE CHLORIDE	10 U	10 U	10 U	10 U	10 U
ACETONE	10 U	10 U	10 U	10 U	10 UJ
CARBON DISULFIDE	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	10 U	10 U	10 U
CHLOROFORM	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	10 U	10 U	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U
BENZENE	10 U	10 U	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U
BROMOFORM	10 U	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U	10 U	10 U
TOLUENE	10 U	10 U	10 U	10 U	10 U
CHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
ETHYLBENZENE	10 U	10 U	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U	10 U	10 U
XYLENES (TOTAL)	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
TRIP BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/l)								
CHLOROMETHANE	10 U	10 U	ND	ND		0/5	NA	NA
BROMOMETHANE	10 U	10 U	ND	ND		0/5	NA	NA
VINYL CHLORIDE	10 U	10 U	ND	ND		0/5	NA	NA
CHLOROETHANE	10 U	10 U	ND	ND		0/5	NA	NA
METHYLENE CHLORIDE	10 U	10 U	ND	ND		0/5	NA	NA
ACETONE	10 U	10 U	ND	ND		0/5	NA	NA
CARBON DISULFIDE	10 U	10 U	ND	ND		0/5	NA	NA
1,1-DICHLOROETHENE	10 U	10 U	ND	ND		0/5	NA	NA
1,1-DICHLOROETHANE	10 U	10 U	ND	ND		0/5	NA	NA
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	ND	ND		0/5	NA	NA
CHLOROFORM	10 U	10 U	ND	ND		0/5	NA	NA
1,2-DICHLOROETHANE	10 U	10 U	ND	ND		0/5	NA	NA
2-BUTANONE	10 U	10 U	ND	ND		0/5	NA	NA
1,1,1-TRICHLOROETHANE	10 U	10 U	ND	ND		0/5	NA	NA
CARBON TETRACHLORIDE	10 U	10 U	ND	ND		0/5	NA	NA
BROMODICHLOROMETHANE	10 U	10 U	ND	ND		0/5	NA	NA
1,2-DICHLOROPROPANE	10 U	10 U	ND	ND		0/5	NA	NA
CIS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/5	NA	NA
TRICHLOROETHENE	10 U	10 U	ND	ND		0/5	NA	NA
DIBROMOCHLOROMETHANE	10 U	10 U	ND	ND		0/5	NA	NA
1,1,2-TRICHLOROETHANE	10 U	10 U	ND	ND		0/5	NA	NA
BENZENE	10 U	10 U	ND	ND		0/5	NA	NA
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/5	NA	NA
BROMOFORM	10 U	10 U	ND	ND		0/5	NA	NA
4-METHYL-2-PENTANONE	10 U	10 U	ND	ND		0/5	NA	NA
2-HEXANONE	10 U	10 U	ND	ND		0/5	NA	NA
TETRACHLOROETHENE	10 U	10 U	ND	ND		0/5	NA	NA
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	ND	ND		0/5	NA	NA
TOLUENE	10 U	10 U	ND	ND		0/5	NA	NA
CHLOROBENZENE	10 U	10 U	ND	ND		0/5	NA	NA
ETHYLBENZENE	10 U	10 U	ND	ND		0/5	NA	NA
STYRENE	10 U	10 U	ND	ND		0/5	NA	NA
XYLENES (TOTAL)	10 U	10 U	ND	ND		0/5	NA	NA

FREQUENCY OF DETECTION SUMMARY
RINSATE BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	4/11/22/RB03	11/22RB04	17/22RB04	17/22RB05	17/22RB06	22/11/21RB09	11/17RB10	4/11/21RB11
DATE SAMPLED	10/31/96	11/01/96	11/02/96	11/03/96	11/04/96	11/14/96	11/15/96	11/16/96
VOLATILES (ug/l)								
CHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROETHANE	10 U	10 U	10 U	10 UJ	10 UJ	10 U	10 U	10 U
METHYLENE CHLORIDE	5 J	10 U	6 J	6 J	6 J	2 J	3 J	2 J
ACETONE	10 U	10 U	10 U	10 U	30	10 U	10 U	10 UJ
CARBON DISULFIDE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROFORM	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BROMOFORM	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOLUENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROBENZENE	2 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ETHYLBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
XYLENES (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
RINSATE BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	4/11/22/RB03	11/22RB04	17/22RB04	17/22RB05	17/22RB06	22/11/21RB09	11/17RB10	4/11/21RB11
DATE SAMPLED	10/31/96	11/01/96	11/02/96	11/03/96	11/04/96	11/14/96	11/15/96	11/16/96
SEMIVOLATILES (ug/l)								
PHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL)ETHER	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
NITROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ISOPHORONE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-NITROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHAN	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLOROANILINE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-METHYLNAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIEN	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
2-CHLORONAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-NITROANILINE	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
DIMETHYLPHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3-NITROANILINE	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
ACENAPHTHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
4-NITROPHENOL	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U

FREQUENCY OF DETECTION SUMMARY
RINSATE BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	4/11/22/RB03	11/22RB04	17/22RB04	17/22RB05	17/22RB06	22/11/21RB09	11/17RB10	4/11/21RB11
DATE SAMPLED	10/31/96	11/01/96	11/02/96	11/03/96	11/04/96	11/14/96	11/15/96	11/16/96
SEMIVOLATILES (ug/l) (cont)								
DIBENZOFURAN	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIETHYLPHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLOROPHENYL-PHENYLETHE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-NITROANILINE	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
N-NITROSODIPHENYLAMINE (1)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-BROMOPHENYL-PHENYLETHER	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CARBAZOLE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-BUTYLPHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PYRENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BUTYLBENZYLPHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-OCTYLPHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
RINSATE BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	4/11/22/RB03	11/22RB04	17/22RB04	17/22RB05	17/22RB06	22/11/21RB09	11/17RB10	4/11/21RB11
DATE SAMPLED	10/31/96	11/01/96	11/02/96	11/03/96	11/04/96	11/14/96	11/15/96	11/16/96
PESTICIDES/PCBS (ug/l)								
ALPHA-BHC	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
BETA-BHC	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
DELTA-BHC	0.05 U	0.05 U	0.0014 J	0.05 U	0.011 J	0.05 U	0.05 U	0.05 U
GAMMA-BHC (LINDANE)	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U		0.05 U
HEPTACHLOR	0.05 U	0.05 U	0.0041 J	0.05 U	0.024 J	0.05 U	0.02 B	0.0088 B
ALDRIN	0.017 J	0.0047 J	0.044 J	0.027 J	0.028 J	0.05 U	0.05 U	0.041 B
HEPTACHLOR EPOXIDE	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ENDOSULFAN I	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
DIELDRIN	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDE	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN II	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDD	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN SULFATE	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDT	0.1 U	0.011 J	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
METHOXYCHLOR	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ENDRIN KETONE	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN ALDEHYDE	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ALPHA-CHLORDANE	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
GAMMA-CHLORDANE	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
TOXAPHENE	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U	5 U
AROCLOR-1016	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
AROCLOR-1221	2 U	2 U	2 UJ	2 U	2 U	2 U	2 U	2 U
AROCLOR-1232	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
AROCLOR-1242	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
AROCLOR-1248	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
AROCLOR-1254	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
AROCLOR-1260	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U

FREQUENCY OF DETECTION SUMMARY
RINSATE BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	4/11/22/RB03	11/22RB04	17/22RB04	17/22RB05	17/22RB06	22/11/21RB09	11/17RB10	4/11/21RB11
DATE SAMPLED	10/31/96	11/01/96	11/02/96	11/03/96	11/04/96	11/14/96	11/15/96	11/16/96
EXPLOSIVES (ug/l)								
1,3-DINITROBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,4-DNT/2,6-DNT	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,4,6-TRINITROTOLUENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
HMX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
NITROBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-NITROTOLUENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
3-NITROTOLUENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
AMINO-DNTS	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
RDX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRYL	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3,5-TRINITROBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

FREQUENCY OF DETECTION SUMMARY
RINSATE BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/l)								
CHLOROMETHANE	10 U	10 U	ND	ND		0/8	NA	NA
BROMOMETHANE	10 U	10 U	ND	ND		0/8	NA	NA
VINYL CHLORIDE	10 U	10 U	ND	ND		0/8	NA	NA
CHLOROETHANE	10 U	10 U	ND	ND		0/8	NA	NA
METHYLENE CHLORIDE	10 U	10 U	2 J	6 J	17/22RB06	7/8	4.29	5.00
ACETONE	10 U	10 U	30	30	17/22RB06	1/8	30.00	30.00
CARBON DISULFIDE	10 U	10 U	ND	ND		0/8	NA	NA
1,1-DICHLOROETHENE	10 U	10 U	ND	ND		0/8	NA	NA
1,1-DICHLOROETHANE	10 U	10 U	ND	ND		0/8	NA	NA
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	ND	ND		0/8	NA	NA
CHLOROFORM	10 U	10 U	ND	ND		0/8	NA	NA
1,2-DICHLOROETHANE	10 U	10 U	ND	ND		0/8	NA	NA
2-BUTANONE	10 U	10 U	ND	ND		0/8	NA	NA
1,1,1-TRICHLOROETHANE	10 U	10 U	ND	ND		0/8	NA	NA
CARBON TETRACHLORIDE	10 U	10 U	ND	ND		0/8	NA	NA
BROMODICHLOROMETHANE	10 U	10 U	ND	ND		0/8	NA	NA
1,2-DICHLOROPROPANE	10 U	10 U	ND	ND		0/8	NA	NA
CIS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/8	NA	NA
TRICHLOROETHENE	10 U	10 U	ND	ND		0/8	NA	NA
DIBROMOCHLOROMETHANE	10 U	10 U	ND	ND		0/8	NA	NA
1,1,2-TRICHLOROETHANE	10 U	10 U	ND	ND		0/8	NA	NA
BENZENE	10 U	10 U	ND	ND		0/8	NA	NA
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/8	NA	NA
BROMOFORM	10 U	10 U	ND	ND		0/8	NA	NA
4-METHYL-2-PENTANONE	10 U	10 U	ND	ND		0/8	NA	NA
2-HEXANONE	10 U	10 U	ND	ND		0/8	NA	NA
TETRACHLOROETHENE	10 U	10 U	ND	ND		0/8	NA	NA
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	ND	ND		0/8	NA	NA
TOLUENE	10 U	10 U	ND	ND		0/8	NA	NA
CHLOROBENZENE	10 U	10 U	2 J	2 J	4/11/22/RB03	1/8	2.00	2.00
ETHYLBENZENE	10 U	10 U	ND	ND		0/8	NA	NA
STYRENE	10 U	10 U	ND	ND		0/8	NA	NA
XYLENES (TOTAL)	10 U	10 U	ND	ND		0/8	NA	NA

FREQUENCY OF DETECTION SUMMARY
RINSATE BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/l)								
PHENOL	10 U	10 U	ND	ND		0/8	NA	NA
BIS(2-CHLOROETHYL)ETHER	10 U	10 U	ND	ND		0/8	NA	NA
2-CHLOROPHENOL	10 U	10 U	ND	ND		0/8	NA	NA
1,3-DICHLOROBENZENE	10 U	10 U	ND	ND		0/8	NA	NA
1,4-DICHLOROBENZENE	10 U	10 U	ND	ND		0/8	NA	NA
1,2-DICHLOROBENZENE	10 U	10 U	ND	ND		0/8	NA	NA
2-METHYLPHENOL	10 U	10 U	ND	ND		0/8	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	ND	ND		0/8	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	ND	ND		0/8	NA	NA
4-METHYLPHENOL	10 U	10 U	ND	ND		0/8	NA	NA
HEXACHLOROETHANE	10 U	10 U	ND	ND		0/8	NA	NA
NITROBENZENE	10 U	10 U	ND	ND		0/8	NA	NA
ISOPHORONE	10 U	10 U	ND	ND		0/8	NA	NA
2-NITROPHENOL	10 U	10 U	ND	ND		0/8	NA	NA
2,4-DIMETHYLPHENOL	10 U	10 U	ND	ND		0/8	NA	NA
BIS(2-CHLOROETHOXY)METHAN	10 U	10 U	ND	ND		0/8	NA	NA
2,4-DICHLOROPHENOL	10 U	10 U	ND	ND		0/8	NA	NA
1,2,4-TRICHLOROBENZENE	10 U	10 U	ND	ND		0/8	NA	NA
NAPHTHALENE	10 U	10 U	ND	ND		0/8	NA	NA
4-CHLOROANILINE	10 U	10 U	ND	ND		0/8	NA	NA
HEXACHLOROBUTADIENE	10 U	10 U	ND	ND		0/8	NA	NA
4-CHLORO-3-METHYLPHENOL	10 U	10 U	ND	ND		0/8	NA	NA
2-METHYLNAPHTHALENE	10 U	10 U	ND	ND		0/8	NA	NA
HEXACHLOROCYCLOPENTADIEN	10 U	10 U	ND	ND		0/8	NA	NA
2,4,6-TRICHLOROPHENOL	10 U	10 U	ND	ND		0/8	NA	NA
2,4,5-TRICHLOROPHENOL	25 U	25 U	ND	ND		0/8	NA	NA
2-CHLORONAPHTHALENE	10 U	10 U	ND	ND		0/8	NA	NA
2-NITROANILINE	25 U	25 U	ND	ND		0/8	NA	NA
DIMETHYLPHTHALATE	10 U	10 U	ND	ND		0/8	NA	NA
ACENAPHTHYLENE	10 U	10 U	ND	ND		0/8	NA	NA
2,6-DINITROTOLUENE	10 U	10 U	ND	ND		0/8	NA	NA
3-NITROANILINE	25 U	25 U	ND	ND		0/8	NA	NA
ACENAPHTHENE	10 U	10 U	ND	ND		0/8	NA	NA
2,4-DINITROPHENOL	25 U	25 U	ND	ND		0/8	NA	NA
4-NITROPHENOL	25 U	25 U	ND	ND		0/8	NA	NA

FREQUENCY OF DETECTION SUMMARY
RINSATE BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/l) (cont)								
DIBENZOFURAN	10 U	10 U	ND	ND		0/8	NA	NA
2,4-DINITROTOLUENE	10 U	10 U	ND	ND		0/8	NA	NA
DIETHYLPHTHALATE	10 U	10 U	ND	ND		0/8	NA	NA
4-CHLOROPHENYL-PHENYLETHE	10 U	10 U	ND	ND		0/8	NA	NA
FLUORENE	10 U	10 U	ND	ND		0/8	NA	NA
4-NITROANILINE	25 U	25 U	ND	ND		0/8	NA	NA
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	ND	ND		0/8	NA	NA
N-NITROSODIPHENYLAMINE (1)	10 U	10 U	ND	ND		0/8	NA	NA
4-BROMOPHENYL-PHENYLETHER	10 U	10 U	ND	ND		0/8	NA	NA
HEXACHLOROBENZENE	10 U	10 U	ND	ND		0/8	NA	NA
PENTACHLOROPHENOL	25 U	25 U	ND	ND		0/8	NA	NA
PHENANTHRENE	10 U	10 U	ND	ND		0/8	NA	NA
ANTHRACENE	10 U	10 U	ND	ND		0/8	NA	NA
CARBAZOLE	10 U	10 U	ND	ND		0/8	NA	NA
DI-N-BUTYLPHTHALATE	10 U	10 U	ND	ND		0/8	NA	NA
FLUORANTHENE	10 U	10 U	ND	ND		0/8	NA	NA
PYRENE	10 U	10 U	ND	ND		0/8	NA	NA
BUTYLBENZYLPHTHALATE	10 U	10 U	ND	ND		0/8	NA	NA
3,3'-DICHLOROBENZIDINE	10 U	10 U	ND	ND		0/8	NA	NA
BENZO(A)ANTHRACENE	10 U	10 U	ND	ND		0/8	NA	NA
CHRYSENE	10 U	10 U	ND	ND		0/8	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	ND	ND		0/8	NA	NA
DI-N-OCTYLPHTHALATE	10 U	10 U	ND	ND		0/8	NA	NA
BENZO(B)FLUORANTHENE	10 U	10 U	ND	ND		0/8	NA	NA
BENZO(K)FLUORANTHENE	10 U	10 U	ND	ND		0/8	NA	NA
BENZO(A)PYRENE	10 U	10 U	ND	ND		0/8	NA	NA
INDENO(1,2,3-CD)PYRENE	10 U	10 U	ND	ND		0/8	NA	NA
DIBENZO(A,H)ANTHRACENE	10 U	10 U	ND	ND		0/8	NA	NA
BENZO(G,H,I)PERYLENE	10 U	10 U	ND	ND		0/8	NA	NA

FREQUENCY OF DETECTION SUMMARY
RINSATE BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDES/PCBS (ug/l)								
ALPHA-BHC	0.05 U	0.05 U	ND	ND		0/8	NA	NA
BETA-BHC	0.05 U	0.05 U	ND	ND		0/8	NA	NA
DELTA-BHC	0.05 U	0.05 U	0.0014 J	0.011 J	17/22RB06	2/8	0.01	0.01
GAMMA-BHC (LINDANE)	0.05 U	0.05 U	0	ND		1/8	0.00	0.00
HEPTACHLOR	0.0088 B	0.05 U	0.0041 J	0.024 J	17/22RB06	2/8	0.01	0.01
ALDRIN	0.041 B	0.05 U	0.0047 J	0.044 J	17/22RB04	5/8	0.02	0.03
HEPTACHLOR EPOXIDE	0.05 U	0.05 U	ND	ND		0/8	NA	NA
ENDOSULFAN I	0.05 U	0.05 U	ND	ND		0/8	NA	NA
DIELDRIN	0.1 U	0.1 U	ND	ND		0/8	NA	NA
4,4'-DDE	0.1 U	0.1 U	ND	ND		0/8	NA	NA
ENDRIN	0.1 U	0.1 U	ND	ND		0/8	NA	NA
ENDOSULFAN II	0.1 U	0.1 U	ND	ND		0/8	NA	NA
4,4'-DDD	0.1 U	0.1 U	ND	ND		0/8	NA	NA
ENDOSULFAN SULFATE	0.1 U	0.1 U	ND	ND		0/8	NA	NA
4,4'-DDT	0.1 U	0.1 U	0.011 J	0.011 J	11/22RB04	1/8	0.01	0.01
METHOXYCHLOR	0.5 U	0.5 U	ND	ND		0/8	NA	NA
ENDRIN KETONE	0.1 U	0.1 U	ND	ND		0/8	NA	NA
ENDRIN ALDEHYDE	0.1 U	0.1 U	ND	ND		0/8	NA	NA
ALPHA-CHLORDANE	0.05 U	0.05 U	ND	ND		0/8	NA	NA
GAMMA-CHLORDANE	0.05 U	0.05 U	ND	ND		0/8	NA	NA
TOXAPHENE	5 U	5 U	ND	ND		0/8	NA	NA
AROCLOR-1016	1 U	1 U	ND	ND		0/8	NA	NA
AROCLOR-1221	2 U	2 U	ND	ND		0/8	NA	NA
AROCLOR-1232	1 U	1 U	ND	ND		0/8	NA	NA
AROCLOR-1242	1 U	1 U	ND	ND		0/8	NA	NA
AROCLOR-1248	1 U	1 U	ND	ND		0/8	NA	NA
AROCLOR-1254	1 U	1 U	ND	ND		0/8	NA	NA
AROCLOR-1260	1 U	1 U	ND	ND		0/8	NA	NA

FREQUENCY OF DETECTION SUMMARY
RINSATE BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
EXPLOSIVES (ug/l)								
1,3-DINITROBENZENE	0.2 U	0.2 U	ND	ND		0/8	NA	NA
2,4-DNT/2,6-DNT	0.2 U	0.2 U	ND	ND		0/8	NA	NA
2,4,6-TRINITROTOLUENE	0.2 U	0.2 U	ND	ND		0/8	NA	NA
HMX	0.5 U	0.5 U	ND	ND		0/8	NA	NA
NITROBENZENE	0.2 U	0.2 U	ND	ND		0/8	NA	NA
2-NITROTOLUENE	0.2 U	0.2 U	ND	ND		0/8	NA	NA
3-NITROTOLUENE	0.2 U	0.2 U	ND	ND		0/8	NA	NA
AMINO-DNTS	0.2 U	0.2 U	ND	ND		0/8	NA	NA
RDX	0.5 U	0.5 U	ND	ND		0/8	NA	NA
TETRYL	0.2 U	0.2 U	ND	ND		0/8	NA	NA
1,3,5-TRINITROBENZENE	0.2 U	0.2 U	ND	ND		0/8	NA	NA

FREQUENCY OF DETECTION SUMMARY
RINSATE BLANKS - QA/QC SAMPLES
TOTAL INORGANICS AND CYANIDE
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	4/11/22/RB03	11/22RB04	17/22RB04	17/22RB05	17/22RB06	22/11/21RB09	11/17RB10	4/11/21RB11
DATE SAMPLED	10/31/96	11/01/96	11/02/96	11/03/96	11/04/96	11/14/96	11/15/96	11/16/96
TOTAL INORGANICS (ug/l)								
ALUMINUM	42.9	48.1	21	28.4	24.4	19 U	27.7 B	72.5 B
ANTIMONY	4	3 U	3 U	3 U	3 U	3 U	3 U	3 U
ARSENIC	3 U	3 U	3 U	3 U	3 U	3 UL	3.9	3 U
BARIUM	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BERYLLIUM	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CADMIUM	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CALCIUM	40.8	33.9	24.9	29.3	124	22 U	43.6 B	276 B
CHROMIUM	5.1 K	1 U	1 U	1 U	1 U	1 U	1 UL	1 U
COBALT	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
COPPER	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U
IRON	26	10 U	10 U	10 U	78.7	10.3 J	10 U	10.1 B
LEAD	2 U	2 U	2 U	2 U	2 U	2 UL	2 U	2 UL
MAGNESIUM	56.2	15 U	15 U	15 U	29.5 B	15 U	15 U	16.3
MANGANESE	1.1	1 U	1 U	2.1	2.8	1 U	1 U	1 U
MERCURY	0.1 U	10 UL	10 UL	0.1 UL	0.1 UL	0.1 U	0.1 U	0.1 U
NICKEL	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
POTASSIUM	128	165 B	137 B	160 B	172 B	61.4	42 U	42 U
SELENIUM	3 U	3 UL	3 UL	3 UL	3.2 L	3 U	3 UL	3 UL
SILVER	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
SODIUM	171 U	171 U	171 U	171 U	171 U	125 U	125 U	346 B
THALLIUM	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
VANADIUM	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ZINC	89.3 J	7 K	10.7 K	13.2 K	3 U	2 UL	3.6 B	12.1 J
CYANIDE, TOTAL	3	3 U	3 U	3 U	3 U	3 U	3.2 B	3 U

FREQUENCY OF DETECTION SUMMARY
RINSATE BLANKS - QA/QC SAMPLES
TOTAL INORGANICS AND CYANIDE
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
TOTAL INORGANICS (ug/l)								
ALUMINUM	19 U	72.5 B	21	48.1	11/22RB04	5/8	32.96	28.40
ANTIMONY	3 U	3 U	4	4	4/11/22/RB03	1/8	4.00	4.00
ARSENIC	3 U	3 U	3.9	3.9	11/17RB10	1/8	3.90	3.90
BARIUM	1 U	1 U	ND	ND		0/8	NA	NA
BERYLLIUM	1 U	1 U	ND	ND		0/8	NA	NA
CADMIUM	1 U	1 U	ND	ND		0/8	NA	NA
CALCIUM	22 U	276 B	24.9	124	17/22RB06	5/8	50.58	33.90
CHROMIUM	1 U	1 U	5.1 K	5.1 K	4/11/22/RB03	1/8	5.10	5.10
COBALT	2 U	2 U	ND	ND		0/8	NA	NA
COPPER	1 U	1 U	2	2	4/11/22/RB03	1/8	2.00	2.00
IRON	10 U	10.1 B	10.3 J	78.7	17/22RB06	3/8	38.33	26.00
LEAD	2 U	2 U	ND	ND		0/8	NA	NA
MAGNESIUM	15 U	29.5 B	16.3	56.2	4/11/22/RB03	2/8	36.25	36.25
MANGANESE	1 U	1 U	1.1	2.8	17/22RB06	3/8	2.00	2.10
MERCURY	0.1 U	10 UL	ND	ND		0/8	NA	NA
NICKEL	2 U	2 U	ND	ND		0/8	NA	NA
POTASSIUM	42 U	172 B	61.4	128	4/11/22/RB03	2/8	94.70	94.70
SELENIUM	3 U	3 U	3.2 L	3.2 L	17/22RB06	1/8	3.20	3.20
SILVER	1 U	1 U	ND	ND		0/8	NA	NA
SODIUM	125 U	346 B	ND	ND		0/8	NA	NA
THALLIUM	6 U	6 U	ND	ND		0/8	NA	NA
VANADIUM	1 U	1 U	ND	ND		0/8	NA	NA
ZINC	2 UL	3.6 B	7 K	89.3 J	4/11/22/RB03	5/8	26.46	12.10
CYANIDE, TOTAL	3 U	3.2 B	3	3	4/11/22/RB03	1/8	3.00	3.00

FREQUENCY OF DETECTION SUMMARY
RINSATE BLANKS - QA/QC SAMPLES
DISSOLVED INORGANICS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	22/11/21RB09	11/17RB10F	4/11/21RB11
DATE SAMPLED	11/14/96	11/15/96	11/16/96
DISSOLVED INORGANICS (ug/l)			
ALUMINUM	19 U	24.4 B	19.2 B
ANTIMONY	3 B	3 U	3 U
ARSENIC	3 UL	3 U	3 U
BARIUM	1 U	1 U	1 U
BERYLLIUM	1 U	1 U	1 U
CADMIUM	1 U	1 U	1 U
CALCIUM	24.4 B	64.5 B	66.7 B
CHROMIUM	1 U	1 UL	1 U
COBALT	2 U	2 U	2 U
COPPER	1 U	1 U	1 U
IRON	17.1 B	18 B	11.1 B
LEAD	2 UL	2 U	2 UL
MAGNESIUM	15 U	15 U	15 U
MANGANESE	1 U	1 U	1 U
MERCURY	0.1 U	0.1 U	0.1 U
NICKEL	2 U	2 U	2 U
POTASSIUM	134 B	42 U	42 U
SELENIUM	3.3 K	3 UL	3 UL
SILVER	1 U	1 U	1 U
SODIUM	125 U	125 U	125 U
THALLIUM	6 U	6 U	6 U
VANADIUM	1 U	1 U	1 U
ZINC	2 U	5.3 B	2.8 B

FREQUENCY OF DETECTION SUMMARY
RINSATE BLANKS - QA/QC SAMPLES
DISSOLVED INORGANICS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
DISSOLVED INORGANICS (ug/l)								
ALUMINUM	19 U	24.4 B	ND	ND		0/3	NA	NA
ANTIMONY	3 B	3 B	ND	ND		0/3	NA	NA
ARSENIC	3 UL	3 UL	ND	ND		0/3	NA	NA
BARIUM	1 U	1 U	ND	ND		0/3	NA	NA
BERYLLIUM	1 U	1 U	ND	ND		0/3	NA	NA
CADMIUM	1 U	1 U	ND	ND		0/3	NA	NA
CALCIUM	24.4 B	66.7 B	ND	ND		0/3	NA	NA
CHROMIUM	1 U	1 U	ND	ND		0/3	NA	NA
COBALT	2 U	2 U	ND	ND		0/3	NA	NA
COPPER	1 U	1 U	ND	ND		0/3	NA	NA
IRON	11.1 B	18 B	ND	ND		0/3	NA	NA
LEAD	2 UL	2 UL	ND	ND		0/3	NA	NA
MAGNESIUM	15 U	15 U	ND	ND		0/3	NA	NA
MANGANESE	1 U	1 U	ND	ND		0/3	NA	NA
MERCURY	0.1 U	0.1 U	ND	ND		0/3	NA	NA
NICKEL	2 U	2 U	ND	ND		0/3	NA	NA
POTASSIUM	42 U	134 B	ND	ND		0/3	NA	NA
SELENIUM	3 UL	3 UL	3.3 K	3.3 K	22/11/21RB09	1/3	3.30	3.30
SILVER	1 U	1 U	ND	ND		0/3	NA	NA
SODIUM	125 U	125 U	ND	ND		0/3	NA	NA
THALLIUM	6 U	6 U	ND	ND		0/3	NA	NA
VANADIUM	1 U	1 U	ND	ND		0/3	NA	NA
ZINC	2 U	5.3 B	ND	ND		0/3	NA	NA

FREQUENCY OF DETECTION SUMMARY
RINSATE BLANKS - QA/QC SAMPLED
ENGINEERING PARAMETERS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	4/11/22/RB03	11/22RB04	17/22RB04	17/22RB05	17/22RB06	22/11/21RB09	11/17RB10	4/11/21RB11
DATE SAMPLED	10/31/96	11/01/96	11/02/96	11/03/96	11/04/96	11/14/96	11/15/96	11/16/96
ENGINEERING (ug/l)								
NITRATE/NITRITE	0.1 U	31 U	0.1 U	0.1 U	0.1 U	NA	0.1 U	NA
NITROGEN, AS AMMONIA	1 U	1 U	1 U	1 U	1 U	NA	NA	NA
TOTAL KJELDAHL NITROGEN	1 U	1	1 U	1	1	NA	NA	NA
TOTAL ORGANIC CARBON	NA	1 U	1 U	1 U	1 U	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
RINSATE BLANKS - QA/QC SAMPLED
ENGINEERING PARAMETERS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	4/11/22/RB03	11/22RB04	17/22RB04	17/22RB05	17/22RB06	22/11/21RB09	11/17RB10	4/11/21RB11
DATE SAMPLED	10/31/96	11/01/96	11/02/96	11/03/96	11/04/96	11/14/96	11/15/96	11/16/96
ENGINEERING (ug/l)								
NITRATE/NITRITE	0.1 U	31 U	0.1 U	0.1 U	0.1 U	NA	0.1 U	NA
NITROGEN, AS AMMONIA	1 U	1 U	1 U	1 U	1 U	NA	NA	NA
TOTAL KJELDAHL NITROGEN	1 U	1	1 U	1	1	NA	NA	NA
TOTAL ORGANIC CARBON	NA	1 U	1 U	1 U	1 U	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
RINSATE BLANKS - QA/QC SAMPLED
ENGINEERING PARAMETERS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
ENGINEERING (ug/l)								
NITRATE/NITRITE	0.1 U	31 U	ND	ND		0/6	NA	NA
NITROGEN, AS AMMONIA	1 U	1 U	ND	ND		0/5	NA	NA
TOTAL KJELDAHL NITROGEN	1 U	1 U	1	1	17/22RB06	3/5	1.00	1.00
TOTAL ORGANIC CARBON	1 U	1 U	ND	ND		0/4	NA	NA

FREQUENCY OF DETECTION SUMMARY
FIELD BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	FBDI-11/96	FBLG-11/96	FBRIG-11/96
DATE SAMPLED	11/12/96	11/12/96	11/12/96
VOLATILES (ug/l)			
CHLOROMETHANE	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U
CHLOROETHANE	10 UJ	10 UJ	10 UJ
METHYLENE CHLORIDE	10 U	6 J	10 U
ACETONE	8 J	10 U	10 U
CARBON DISULFIDE	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	10 U
CHLOROFORM	10 U	10 U	69
1,2-DICHLOROETHANE	10 U	10 U	10 U
2-BUTANONE	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	9 J
1,2-DICHLOROPROPANE	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U
TRICHLOROETHENE	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U
BENZENE	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U
BROMOFORM	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U
TOLUENE	10 U	10 U	10 U
CHLOROBENZENE	10 U	10 U	10 U
ETHYLBENZENE	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U
XYLENES (TOTAL)	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
FIELD BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	FBDI-11/96	FBLG-11/96	FBRIG-11/96
DATE SAMPLED	11/12/96	11/12/96	11/12/96
SEMIVOLATILES (ug/l)			
PHENOL	2 J	10 U	1 J
BIS(2-CHLOROETHYL)ETHER	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U
2-METHYLPHENOL	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	10 U
4-METHYLPHENOL	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 U	10 U
NITROBENZENE	10 U	10 U	10 U
ISOPHORONE	10 U	10 U	10 U
2-NITROPHENOL	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	10 U
NAPHTHALENE	10 U	10 U	10 U
4-CHLOROANILINE	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U
2-METHYLNAPHTHALENE	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	25 U	25 U	25 U
2-CHLORONAPHTHALENE	10 U	10 U	10 U
2-NITROANILINE	25 U	25 U	25 U
DIMETHYLPHTHALATE	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 U	10 U	10 U
3-NITROANILINE	25 U	25 U	25 U
ACENAPHTHENE	10 U	10 U	10 U
2,4-DINITROPHENOL	25 U	25 U	25 U
4-NITROPHENOL	25 U	25 U	25 U

FREQUENCY OF DETECTION SUMMARY
FIELD BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	FBDI-11/96	FBLG-11/96	FBRIG-11/96
DATE SAMPLED	11/12/96	11/12/96	11/12/96
SEMIVOLATILES (ug/l) (cont)			
DIBENZOFURAN	10 U	10 U	10 U
2,4-DINITROTOLUENE	10 U	10 U	10 U
DIETHYLPHTHALATE	10 U	10 U	10 U
4-CHLOROPHENYL-PHENYLETHER	10 U	10 U	10 U
FLUORENE	10 U	10 U	10 U
4-NITROANILINE	25 U	25 U	25 U
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	25 U
N-NITROSODIPHENYLAMINE (1)	10 U	10 U	10 U
4-BROMOPHENYL-PHENYLETHER	10 U	10 U	10 U
HEXACHLOROBENZENE	10 U	10 U	10 U
PENTACHLOROPHENOL	25 U	25 U	25 U
PHENANTHRENE	10 U	10 U	10 U
ANTHRACENE	10 U	10 U	10 U
CARBAZOLE	10 U	10 U	10 U
DI-N-BUTYLPHTHALATE	10 U	10 U	1 J
FLUORANTHENE	10 U	10 U	10 U
PYRENE	10 U	10 U	10 U
BUTYLBENZYLPHTHALATE	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	10 U	10 U	10 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U
CHRYSENE	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U
DI-N-OCTYLPHTHALATE	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U
DIBENZO(A,H)ANTHRACENE	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
FIELD BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	FBDI-11/96	FBLG-11/96	FBRIG-11/96
DATE SAMPLED	11/12/96	11/12/96	11/12/96
PESTICIDES/PCBS (ug/l)			
ALPHA-BHC	0.05 U	0.05 U	0.05 U
BETA-BHC	0.05 U	0.05 U	0.05 U
DELTA-BHC	0.05 U	0.05 U	0.05 U
GAMMA-BHC (LINDANE)	0.05 U	0.05 U	0.05 U
HEPTACHLOR	0.0037 B	0.0035 B	0.05 U
ALDRIN	0.05 U	0.014 J	0.05 U
HEPTACHLOR EPOXIDE	0.05 U	0.05 U	0.05 U
ENDOSULFAN I	0.05 U	0.05 U	0.05 U
DIELDRIN	0.1 U	0.1 U	0.1 U
4,4'-DDE	0.1 U	0.1 U	0.1 U
ENDRIN	0.1 U	0.1 U	0.1 U
ENDOSULFAN II	0.1 U	0.1 U	0.1 U
4,4'-DDD	0.1 U	0.1 U	0.1 U
ENDOSULFAN SULFATE	0.1 U	0.1 U	0.1 U
4,4'-DDT	0.1 U	0.1 U	0.1 U
METHOXYCHLOR	0.5 U	0.5 U	0.5 U
ENDRIN KETONE	0.1 U	0.1 U	0.1 U
ENDRIN ALDEHYDE	0.1 U	0.1 U	0.1 U
ALPHA-CHLORDANE	0.05 U	0.05 U	0.05 U
GAMMA-CHLORDANE	0.05 U	0.05 U	0.05 U
TOXAPHENE	5 U	5 U	5 U
AROCLOR-1016	1 U	1 U	1 U
AROCLOR-1221	2 U	2 U	2 U
AROCLOR-1232	1 U	1 U	1 U
AROCLOR-1242	1 U	1 U	1 U
AROCLOR-1248	1 U	1 U	1 U
AROCLOR-1254	1 U	1 U	1 U
AROCLOR-1260	1 U	1 U	1 U

FREQUENCY OF DETECTION SUMMARY
FIELD BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	FBDI-11/96	FBLG-11/96	FBRIG-11/96
DATE SAMPLED	11/12/96	11/12/96	11/12/96
EXPLOSIVES (ug/l)			
1,3-DINITROBENZENE	0.2 U	0.2 U	0.2 U
2,4-DNT/2,6-DNT	0.81	0.2 U	0.2 U
2,4,6-TRINITROTOLUENE	0.2 U	0.2 U	0.2 U
HMX	0.53	0.5 U	0.5 U
NITROBENZENE	0.2 U	0.2 U	0.2 U
2-NITROTOLUENE	0.2 U	0.2 U	0.2 U
3-NITROTOLUENE	0.2 U	0.2 U	0.2 U
AMINO-DNTS	0.2 U	0.2 U	0.2 U
RDX	1.4 U	0.5 U	0.5 U
TETRYL	0.3 U	0.2 U	0.36 U
1,3,5-TRINITROBENZENE	0.2 U	0.2 U	0.2 U

FREQUENCY OF DETECTION SUMMARY
FIELD BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/l)								
CHLOROMETHANE	10 U	10 U	ND	ND		0/3	NA	NA
BROMOMETHANE	10 U	10 U	ND	ND		0/3	NA	NA
VINYL CHLORIDE	10 U	10 U	ND	ND		0/3	NA	NA
CHLOROETHANE	10 UJ	10 UJ	ND	ND		0/3	NA	NA
METHYLENE CHLORIDE	10 U	10 U	6 J	6 J	FBLG-11/96	1/3	6.00	6.00
ACETONE	10 U	10 U	8 J	8 J	FBDJ-11/96	1/3	8.00	8.00
CARBON DISULFIDE	10 U	10 U	ND	ND		0/3	NA	NA
1,1-DICHLOROETHENE	10 U	10 U	ND	ND		0/3	NA	NA
1,1-DICHLOROETHANE	10 U	10 U	ND	ND		0/3	NA	NA
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	ND	ND		0/3	NA	NA
CHLOROFORM	10 U	10 U	69	69	FBRIG-11/96	1/3	69.00	69.00
1,2-DICHLOROETHANE	10 U	10 U	ND	ND		0/3	NA	NA
2-BUTANONE	10 U	10 U	ND	ND		0/3	NA	NA
1,1,1-TRICHLOROETHANE	10 U	10 U	ND	ND		0/3	NA	NA
CARBON TETRACHLORIDE	10 U	10 U	ND	ND		0/3	NA	NA
BROMODICHLOROMETHANE	10 U	10 U	9 J	9 J	FBRIG-11/96	1/3	9.00	9.00
1,2-DICHLOROPROPANE	10 U	10 U	ND	ND		0/3	NA	NA
CIS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/3	NA	NA
TRICHLOROETHENE	10 U	10 U	ND	ND		0/3	NA	NA
DIBROMOCHLOROMETHANE	10 U	10 U	ND	ND		0/3	NA	NA
1,1,2-TRICHLOROETHANE	10 U	10 U	ND	ND		0/3	NA	NA
BENZENE	10 U	10 U	ND	ND		0/3	NA	NA
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/3	NA	NA
BROMOFORM	10 U	10 U	ND	ND		0/3	NA	NA
4-METHYL-2-PENTANONE	10 U	10 U	ND	ND		0/3	NA	NA
2-HEXANONE	10 U	10 U	ND	ND		0/3	NA	NA
TETRACHLOROETHENE	10 U	10 U	ND	ND		0/3	NA	NA
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	ND	ND		0/3	NA	NA
TOLUENE	10 U	10 U	ND	ND		0/3	NA	NA
CHLOROBENZENE	10 U	10 U	ND	ND		0/3	NA	NA
ETHYLBENZENE	10 U	10 U	ND	ND		0/3	NA	NA
STYRENE	10 U	10 U	ND	ND		0/3	NA	NA
XYLENES (TOTAL)	10 U	10 U	ND	ND		0/3	NA	NA

FREQUENCY OF DETECTION SUMMARY
FIELD BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/l)								
PHENOL	10 U	10 U	1 J	2 J	FBDI-11/96	2/3	1.50	1.50
BIS(2-CHLOROETHYL)ETHER	10 U	10 U	ND	ND		0/3	NA	NA
2-CHLOROPHENOL	10 U	10 U	ND	ND		0/3	NA	NA
1,3-DICHLOROBENZENE	10 U	10 U	ND	ND		0/3	NA	NA
1,4-DICHLOROBENZENE	10 U	10 U	ND	ND		0/3	NA	NA
1,2-DICHLOROBENZENE	10 U	10 U	ND	ND		0/3	NA	NA
2-METHYLPHENOL	10 U	10 U	ND	ND		0/3	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	ND	ND		0/3	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	ND	ND		0/3	NA	NA
4-METHYLPHENOL	10 U	10 U	ND	ND		0/3	NA	NA
HEXACHLOROETHANE	10 U	10 U	ND	ND		0/3	NA	NA
NITROBENZENE	10 U	10 U	ND	ND		0/3	NA	NA
ISOPHORONE	10 U	10 U	ND	ND		0/3	NA	NA
2-NITROPHENOL	10 U	10 U	ND	ND		0/3	NA	NA
2,4-DIMETHYLPHENOL	10 U	10 U	ND	ND		0/3	NA	NA
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	ND	ND		0/3	NA	NA
2,4-DICHLOROPHENOL	10 U	10 U	ND	ND		0/3	NA	NA
1,2,4-TRICHLOROBENZENE	10 U	10 U	ND	ND		0/3	NA	NA
NAPHTHALENE	10 U	10 U	ND	ND		0/3	NA	NA
4-CHLOROANILINE	10 U	10 U	ND	ND		0/3	NA	NA
HEXACHLOROBUTADIENE	10 U	10 U	ND	ND		0/3	NA	NA
4-CHLORO-3-METHYLPHENOL	10 U	10 U	ND	ND		0/3	NA	NA
2-METHYLNAPHTHALENE	10 U	10 U	ND	ND		0/3	NA	NA
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	ND	ND		0/3	NA	NA
2,4,6-TRICHLOROPHENOL	10 U	10 U	ND	ND		0/3	NA	NA
2,4,5-TRICHLOROPHENOL	25 U	25 U	ND	ND		0/3	NA	NA
2-CHLORONAPHTHALENE	10 U	10 U	ND	ND		0/3	NA	NA
2-NITROANILINE	25 U	25 U	ND	ND		0/3	NA	NA
DIMETHYLPHTHALATE	10 U	10 U	ND	ND		0/3	NA	NA
ACENAPHTHYLENE	10 U	10 U	ND	ND		0/3	NA	NA
2,6-DINITROTOLUENE	10 U	10 U	ND	ND		0/3	NA	NA
3-NITROANILINE	25 U	25 U	ND	ND		0/3	NA	NA
ACENAPHTHENE	10 U	10 U	ND	ND		0/3	NA	NA
2,4-DINITROPHENOL	25 U	25 U	ND	ND		0/3	NA	NA
4-NITROPHENOL	25 U	25 U	ND	ND		0/3	NA	NA

FREQUENCY OF DETECTION SUMMARY
FIELD BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/l) (cont)								
DIBENZOFURAN	10 U	10 U	ND	ND		0/3	NA	NA
2,4-DINITROTOLUENE	10 U	10 U	ND	ND		0/3	NA	NA
DIETHYLPHTHALATE	10 U	10 U	ND	ND		0/3	NA	NA
4-CHLOROPHENYL-PHENYLETHER	10 U	10 U	ND	ND		0/3	NA	NA
FLUORENE	10 U	10 U	ND	ND		0/3	NA	NA
4-NITROANILINE	25 U	25 U	ND	ND		0/3	NA	NA
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	ND	ND		0/3	NA	NA
N-NITROSODIPHENYLAMINE (1)	10 U	10 U	ND	ND		0/3	NA	NA
4-BROMOPHENYL-PHENYLETHER	10 U	10 U	ND	ND		0/3	NA	NA
HEXACHLOROBENZENE	10 U	10 U	ND	ND		0/3	NA	NA
PENTACHLOROPHENOL	25 U	25 U	ND	ND		0/3	NA	NA
PHENANTHRENE	10 U	10 U	ND	ND		0/3	NA	NA
ANTHRACENE	10 U	10 U	ND	ND		0/3	NA	NA
CARBAZOLE	10 U	10 U	ND	ND		0/3	NA	NA
DI-N-BUTYLPHTHALATE	10 U	10 U	1 J	1 J	FBRIG-11/96	1/3	1.00	1.00
FLUORANTHENE	10 U	10 U	ND	ND		0/3	NA	NA
PYRENE	10 U	10 U	ND	ND		0/3	NA	NA
BUTYLBENZYLPHTHALATE	10 U	10 U	ND	ND		0/3	NA	NA
3,3'-DICHLOROBENZIDINE	10 U	10 U	ND	ND		0/3	NA	NA
BENZO(A)ANTHRACENE	10 U	10 U	ND	ND		0/3	NA	NA
CHRYSENE	10 U	10 U	ND	ND		0/3	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	ND	ND		0/3	NA	NA
DI-N-OCTYLPHTHALATE	10 U	10 U	ND	ND		0/3	NA	NA
BENZO(B)FLUORANTHENE	10 U	10 U	ND	ND		0/3	NA	NA
BENZO(K)FLUORANTHENE	10 U	10 U	ND	ND		0/3	NA	NA
BENZO(A)PYRENE	10 U	10 U	ND	ND		0/3	NA	NA
INDENO(1,2,3-CD)PYRENE	10 U	10 U	ND	ND		0/3	NA	NA
DIBENZO(A,H)ANTHRACENE	10 U	10 U	ND	ND		0/3	NA	NA
BENZO(G,H,I)PERYLENE	10 U	10 U	ND	ND		0/3	NA	NA

FREQUENCY OF DETECTION SUMMARY
FIELD BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDES/PCBS (ug/l)								
ALPHA-BHC	0.05 U	0.05 U	ND	ND		0/3	NA	NA
BETA-BHC	0.05 U	0.05 U	ND	ND		0/3	NA	NA
DELTA-BHC	0.05 U	0.05 U	ND	ND		0/3	NA	NA
GAMMA-BHC (LINDANE)	0.05 U	0.05 U	ND	ND		0/3	NA	NA
HEPTACHLOR	0.0035 B	0.05 U	ND	ND		0/3	NA	NA
ALDRIN	0.05 U	0.05 U	0.014 J	0.014 J	FBLG-11/96	1/3	0.01	0.01
HEPTACHLOR EPOXIDE	0.05 U	0.05 U	ND	ND		0/3	NA	NA
ENDOSULFAN I	0.05 U	0.05 U	ND	ND		0/3	NA	NA
DIELDRIN	0.1 U	0.1 U	ND	ND		0/3	NA	NA
4,4'-DDE	0.1 U	0.1 U	ND	ND		0/3	NA	NA
ENDRIN	0.1 U	0.1 U	ND	ND		0/3	NA	NA
ENDOSULFAN II	0.1 U	0.1 U	ND	ND		0/3	NA	NA
4,4'-DDD	0.1 U	0.1 U	ND	ND		0/3	NA	NA
ENDOSULFAN SULFATE	0.1 U	0.1 U	ND	ND		0/3	NA	NA
4,4'-DDT	0.1 U	0.1 U	ND	ND		0/3	NA	NA
METHOXYCHLOR	0.5 U	0.5 U	ND	ND		0/3	NA	NA
ENDRIN KETONE	0.1 U	0.1 U	ND	ND		0/3	NA	NA
ENDRIN ALDEHYDE	0.1 U	0.1 U	ND	ND		0/3	NA	NA
ALPHA-CHLORDANE	0.05 U	0.05 U	ND	ND		0/3	NA	NA
GAMMA-CHLORDANE	0.05 U	0.05 U	ND	ND		0/3	NA	NA
TOXAPHENE	5 U	5 U	ND	ND		0/3	NA	NA
AROCLOR-1016	1 U	1 U	ND	ND		0/3	NA	NA
AROCLOR-1221	2 U	2 U	ND	ND		0/3	NA	NA
AROCLOR-1232	1 U	1 U	ND	ND		0/3	NA	NA
AROCLOR-1242	1 U	1 U	ND	ND		0/3	NA	NA
AROCLOR-1248	1 U	1 U	ND	ND		0/3	NA	NA
AROCLOR-1254	1 U	1 U	ND	ND		0/3	NA	NA
AROCLOR-1260	1 U	1 U	ND	ND		0/3	NA	NA

FREQUENCY OF DETECTION SUMMARY
FIELD BLANKS - QA/QC SAMPLES
ORGANIC COMPOUNDS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
EXPLOSIVES (ug/l)								
1,3-DINITROBENZENE	0.2 U	0.2 U	ND	ND		0/3	NA	NA
2,4-DNT/2,6-DNT	0.2 U	0.2 U	0.81	0.81	FBDI-11/96	1/3	0.81	0.81
2,4,6-TRINITROTOLUENE	0.2 U	0.2 U	ND	ND		0/3	NA	NA
HMX	0.5 U	0.5 U	0.53	0.53	FBDI-11/96	1/3	0.53	0.53
NITROBENZENE	0.2 U	0.2 U	ND	ND		0/3	NA	NA
2-NITROTOLUENE	0.2 U	0.2 U	ND	ND		0/3	NA	NA
3-NITROTOLUENE	0.2 U	0.2 U	ND	ND		0/3	NA	NA
AMINO-DNTS	0.2 U	0.2 U	ND	ND		0/3	NA	NA
RDX	0.5 U	1.4 U	ND	ND		0/3	NA	NA
TETRYL	0.2 U	0.36 U	ND	ND		0/3	NA	NA
1,3,5-TRINITROBENZENE	0.2 U	0.2 U	ND	ND		0/3	NA	NA

FREQUENCY OF DETECTION SUMMARY
FIELD BLANKS - QA/QC SAMPLES
TOTAL INORGANICS AND CYANIDE
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	FBDI-11/96	FBLG-11/96	FBRIG-11/96
DATE SAMPLED	11/12/96	11/12/96	11/12/96
TOTAL INORGANICS (ug/l)			
ALUMINUM	37.4	19 U	1470
ANTIMONY	6.7 B	3 U	3 U
ARSENIC	3 UL	3 UL	3 UL
BARIUM	1 U	1 U	33.6
BERYLLIUM	1 U	1 U	1 U
CADMIUM	1 U	1 U	1 U
CALCIUM	23.9 B	22 U	57800
CHROMIUM	1 U	1 U	6.8 K
COBALT	2 U	2 U	2 U
COPPER	1.3	1 U	9.7
IRON	11.8 J	21.7 J	2580 J
LEAD	2 UL	2 UL	2 UL
MAGNESIUM	15 U	15 U	2170
MANGANESE	1.1 B	1 U	46.8
MERCURY	0.1 U	0.1 K	0.1 U
NICKEL	2 U	2 U	2
POTASSIUM	57.2	50.8	2790
SELENIUM	3 U	3 U	3 U
SILVER	1 U	1 U	1 U
SODIUM	183	125 U	6190
THALLIUM	6 U	6 U	6 U
VANADIUM	1 U	1 U	2.7
ZINC	2 UL	2 UL	100 L
CYANIDE, TOTAL	3 U	3 U	3 U

FREQUENCY OF DETECTION SUMMARY
FIELD BLANKS - QA/QC SAMPLES
TOTAL INORGANICS AND CYANIDE
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
TOTAL INORGANICS (ug/l)								
ALUMINUM	19 U	19 U	37.4	1470	FBRIG-11/96	2/3	753.70	753.70
ANTIMONY	3 U	6.7 B	ND	ND		0/3	NA	NA
ARSENIC	3 UL	3 UL	ND	ND		0/3	NA	NA
BARIUM	1 U	1 U	33.6	33.6	FBRIG-11/96	1/3	33.60	33.60
BERYLLIUM	1 U	1 U	ND	ND		0/3	NA	NA
CADMIUM	1 U	1 U	ND	ND		0/3	NA	NA
CALCIUM	22 U	23.9 B	57800	57800	FBRIG-11/96	1/3	57800.00	57800.00
CHROMIUM	1 U	1 U	6.8 K	6.8 K	FBRIG-11/96	1/3	6.80	6.80
COBALT	2 U	2 U	ND	ND		0/3	NA	NA
COPPER	1 U	1 U	1.3	9.7	FBRIG-11/96	2/3	5.50	5.50
IRON	NA	NA	11.8 J	2580 J	FBRIG-11/96	3/3	871.17	21.70
LEAD	2 UL	2 UL	ND	ND		0/3	NA	NA
MAGNESIUM	15 U	15 U	2170	2170	FBRIG-11/96	1/3	2170.00	2170.00
MANGANESE	1 U	1.1 B	46.8	46.8	FBRIG-11/96	1/3	46.80	46.80
MERCURY	0.1 U	0.1 U	0.1 K	0.1 K	FBLG-11/96	1/3	0.10	0.10
NICKEL	2 U	2 U	2	2	FBRIG-11/96	1/3	2.00	2.00
POTASSIUM	NA	NA	50.8	2790	FBRIG-11/96	3/3	966.00	57.20
SELENIUM	3 U	3 U	ND	ND		0/3	NA	NA
SILVER	1 U	1 U	ND	ND		0/3	NA	NA
SODIUM	125 U	125 U	183	6190	FBRIG-11/96	2/3	3186.50	3186.50
THALLIUM	6 U	6 U	ND	ND		0/3	NA	NA
VANADIUM	1 U	1 U	2.7	2.7	FBRIG-11/96	1/3	2.70	2.70
ZINC	2 UL	2 UL	100 L	100 L	FBRIG-11/96	1/3	100.00	100.00
CYANIDE, TOTAL	3 U	3 U	ND	ND		0/3	NA	NA

FREQUENCY OF DETECTION SUMMARY
FIELD BLANKS - QA/QC SAMPLES
DISSOLVED INORGANICS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	FBDI-11/96F	FBLG-11/96F	FBRIG-11/96F
DATE SAMPLED	11/12/96	11/12/96	11/12/96
DISSOLVED INORGANICS (ug/l)			
ALUMINUM	19 U	19 U	224
ANTIMONY	3 U	3 U	3 U
ARSENIC	3 UL	3 UL	3 UL
BARIUM	1 U	1 U	20.2
BERYLLIUM	1 U	1 U	1 U
CADMIUM	1 U	1 U	1 U
CALCIUM	160 B	23.4 B	48000
CHROMIUM	1 U	1 U	1 U
COBALT	2 U	2 U	2 U
COPPER	1 U	1 U	1.8 B
IRON	35.5 B	10 U	33.6 B
LEAD	2 UL	2 UL	2 UL
MAGNESIUM	15 U	15 U	1430
MANGANESE	1.2 B	1 U	4.5 B
MERCURY	0.1 U	0.11 K	0.1 K
NICKEL	2 U	2 U	2 U
POTASSIUM	42 U	42 U	2790
SELENIUM	3 U	3 U	3 U
SILVER	1 U	1 U	1 U
SODIUM	134	125 U	5420
THALLIUM	6 U	6 U	6 U
VANADIUM	1 U	1 U	1.6
ZINC	10.6	2 U	20 U

FREQUENCY OF DETECTION SUMMARY
FIELD BLANKS - QA/QC SAMPLES
DISSOLVED INORGANICS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
DISSOLVED INORGANICS (ug/l)								
ALUMINUM	19 U	19 U	224	224	FBRIG-11/96F	1/3	224.00	224.00
ANTIMONY	3 U	3 U	ND	ND		0/3	NA	NA
ARSENIC	3 UL	3 UL	ND	ND		0/3	NA	NA
BARIUM	1 U	1 U	20.2	20.2	FBRIG-11/96F	1/3	20.20	20.20
BERYLLIUM	1 U	1 U	ND	ND		0/3	NA	NA
CADMIUM	1 U	1 U	ND	ND		0/3	NA	NA
CALCIUM	23.4 B	160 B	48000	48000	FBRIG-11/96F	1/3	48000.00	48000.00
CHROMIUM	1 U	1 U	ND	ND		0/3	NA	NA
COBALT	2 U	2 U	ND	ND		0/3	NA	NA
COPPER	1 U	1.8 B	ND	ND		0/3	NA	NA
IRON	10 U	35.5 B	ND	ND		0/3	NA	NA
LEAD	2 UL	2 UL	ND	ND		0/3	NA	NA
MAGNESIUM	15 U	15 U	1430	1430	FBRIG-11/96F	1/3	1430.00	1430.00
MANGANESE	1 U	4.5 B	ND	ND		0/3	NA	NA
MERCURY	0.1 U	0.1 U	0.1 K	0.11 K	FBLG-11/96F	2/3	0.11	0.11
NICKEL	2 U	2 U	ND	ND		0/3	NA	NA
POTASSIUM	42 U	42 U	2790	2790	FBRIG-11/96F	1/3	2790.00	2790.00
SELENIUM	3 U	3 U	ND	ND		0/3	NA	NA
SILVER	1 U	1 U	ND	ND		0/3	NA	NA
SODIUM	125 U	125 U	134	5420	FBRIG-11/96F	2/3	2777.00	2777.00
THALLIUM	6 U	6 U	ND	ND		0/3	NA	NA
VANADIUM	1 U	1 U	1.6	1.6	FBRIG-11/96F	1/3	1.60	1.60
ZINC	2 U	20 U	10.6	10.6	FBDI-11/96F	1/3	10.60	10.60

FREQUENCY OF DETECTION SUMMARY
FIELD BLANKS - QA/QC SAMPLES
ENGINEERING PARAMETERS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID	FBDI-11/96	FBLG-11/96	FBRIG-11/96
DATE SAMPLED	11/12/96	11/12/96	11/12/96
ENGINEERING (ug/l)			
NITRATE/NITRITE	100 U	100 U	100 U
ORTHO-PHOSPHATE	500 U	500 U	500 U
BROMIDE	500 U	500 U	500 U
CHLORIDE	1000 U	1000 U	11400
SULFATE	1000 U	1000 U	34900
PROPANE	0.6 U	0.6 U	0.6 U
METHANE	0.2 U	0.2 U	0.5
ETHENE	0.4 U	0.4 U	0.4 U
ETHANE	0.4 U	0.4 U	0.4 U

FREQUENCY OF DETECTION SUMMARY
FIELD BLANKS - QA/QC SAMPLES
ENGINEERING PARAMETERS
SITES 11 AND 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SAMPLE ID DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
ENGINEERING (ug/l)								
NITRATE/NITRITE	100 U	100 U	ND	ND		0/3	NA	NA
ORTHO-PHOSPHATE	500 U	500 U	ND	ND		0/3	NA	NA
BROMIDE	500 U	500 U	ND	ND		0/3	NA	NA
CHLORIDE	1000 U	1000 U	11400	11400	FBRIG-11/96	1/3	11400.00	11400.00
SULFATE	1000 U	1000 U	34900	34900	FBRIG-11/96	1/3	34900.00	34900.00
PROPANE	0.6 U	0.6 U	ND	ND		0/3	NA	NA
METHANE	0.2 U	0.2 U	0.5	0.5	FBRIG-11/96	1/3	0.50	0.50
ETHENE	0.4 U	0.4 U	ND	ND		0/3	NA	NA
ETHANE	0.4 U	0.4 U	ND	ND		0/3	NA	NA

APPENDIX H
STATISTICAL SUMMARY FOR RISK ASSESSMENT

RISK TABLES
SURFACE SOIL - STATISTICAL SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL	DATA IS NORMALLY DISTRIBUTED (W TEST)	DATA IS LOG NORMALLY DISTRIBUTED (W TEST)
SEMIVOLATILES (ug/kg)								
BIS(2-ETHYLHEXYL)PHTHALATE	190.38	22.77	201.64	5.24	0.14	205.67	no	no
PESTICIDES/PCBS (ug/kg)								
ENDOSULFAN II	16.78	7.35	20.41	2.35	1.55	236.92	no	no
4,4'-DDT	16.79	12.16	22.80	2.18	1.74	347.26	no	no
METHOXYCHLOR	84.27	35.49	101.81	4.00	1.56	1300.96	no	no
EXPLOSIVES (mg/kg)								
2,4,6-TRINITROTOLUENE	0.14	0.07	0.18	-2.00	0.30	0.17	no	no
AMINO-DNTS	0.19	0.16	0.27	-1.89	0.60	0.27	no	no

RISK TABLES
SURFACE SOIL - STATISTICAL SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL	DATA IS NORMALLY DISTRIBUTED (W TEST)	DATA IS LOG NORMALLY DISTRIBUTED (W TEST)
TOTAL INORGANICS (mg/kg)								
ALUMINUM	5623.85	1781.37	6504.27	8.60	0.28	6578.30	no	yes
ANTIMONY	0.43	0.18	0.52	-0.88	0.29	0.51	no	no
ARSENIC	3.77	3.81	5.65	1.09	0.60	5.40	no	no
BARIUM	66.88	20.58	77.05	4.15	0.35	82.72	yes	yes
BERYLLIUM	0.15	0.10	0.19	-2.03	0.38	0.18	no	no
CADMIUM	0.56	0.27	0.69	-0.71	0.57	0.83	yes	yes
CALCIUM	10962.85	21780.80	21727.74	8.14	1.42	44361.59	no	yes
CHROMIUM	11.24	11.49	16.92	2.20	0.56	15.19	no	no
COBALT	2.52	2.32	3.66	0.73	0.54	3.42	no	no
COPPER	45.50	53.73	72.05	3.51	0.71	71.79	no	yes
IRON	7827.69	4212.55	9909.69	8.87	0.43	10108.43	no	yes
LEAD	25.88	10.96	31.29	3.16	0.46	34.81	yes	yes
MAGNESIUM	411.08	239.07	529.23	5.90	0.47	544.02	no	no
MANGANESE	110.67	29.34	125.17	4.67	0.26	128.09	yes	yes
MERCURY	0.21	0.42	0.41	-2.43	1.15	0.51	no	no
NICKEL	4.60	1.66	5.42	1.48	0.31	5.50	no	yes
POTASSIUM	310.77	180.99	400.22	5.62	0.48	416.27	no	yes
SILVER	6.67	8.33	10.78	1.32	1.10	19.59	no	yes
SODIUM	62.46	133.87	128.62	3.37	0.95	98.91	no	no
VANADIUM	12.80	6.64	16.08	2.47	0.38	15.85	no	no
ZINC	42.47	19.70	52.21	3.64	0.50	59.77	yes	yes

RISK TABLES
SUBSURFACE SOIL - STATISTICAL SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL	DATA IS NORMALLY DISTRIBUTED (W TEST)	DATA IS LOG NORMALLY DISTRIBUTED (W TEST)
VOLATILES (ug/kg)								
SEMIVOLATILES (ug/kg)								
BIS(2-ETHYLHEXYL)PHTHALATE	178.56	51.96	210.77	5.10	0.51	294.68	no	no
PESTICIDES/PCBS (ug/kg)								
4,4'-DDT	3.94	5.89	7.88	0.89	0.84	9.67	no	no
METHOXYCHLOR	6.56	6.28	10.77	1.33	1.21	52.31	no	no
EXPLOSIVES (mg/kg)								
2,4,6-TRINITROTOLUENE	133.66	399.88	381.58	-0.40	2.92	327963.68	no	no

RISK TABLES
SUBSURFACE SOIL -STATISTICAL SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL	DATA IS NORMALLY DISTRIBUTED (W TEST)	DATA IS LOG NORMALLY DISTRIBUTED (W TEST)
TOTAL INORGANICS (mg/kg)								
ALUMINUM	2378.89	648.58	2781.01	7.73	0.32	3062.82	yes	yes
ARSENIC	2.77	1.22	3.52	0.92	0.50	4.39	yes	yes
BARIUM	6.92	2.18	8.27	1.88	0.37	9.30	yes	yes
CALCIUM	310.33	89.67	365.93	5.69	0.34	407.53	yes	yes
CHROMIUM	6.32	1.73	7.39	1.80	0.34	8.32	yes	no
COBALT	0.76	0.18	0.88	-0.29	0.24	0.91	yes	yes
COPPER	1.12	0.38	1.35	0.05	0.39	1.53	yes	yes
IRON	3998.89	1412.81	4874.83	8.24	0.34	5196.89	yes	yes
LEAD	2.29	0.82	2.80	0.75	0.44	3.36	yes	yes
MAGNESIUM	264.91	85.13	317.69	5.51	0.44	389.24	yes	no
MANGANESE	7.23	1.93	8.43	1.94	0.29	8.98	yes	yes
NICKEL	1.60	0.34	1.81	0.45	0.23	1.91	yes	yes
POTASSIUM	393.78	127.82	473.03	5.89	0.51	640.50	no	no
SELENIUM	0.43	0.21	0.56	-0.93	0.43	0.61	no	no
SODIUM	51.01	10.52	57.53	3.91	0.24	60.78	yes	no
VANADIUM	6.44	1.76	7.54	1.82	0.31	8.26	yes	yes
ZINC	3.37	1.15	4.08	1.16	0.35	4.44	yes	yes
CYANIDE, TOTAL	0.26	0.21	0.40	-1.67	0.87	0.81	no	no

RISK TABLES
SHALLOW GROUNDWATER - STATISTICAL SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL	DATA IS NORMALLY DISTRIBUTED (W TEST)	DATA IS LOG NORMALLY DISTRIBUTED (W TEST)
VOLATILES (ug/l)								
CHLOROMETHANE	4.50	1.00	5.68	1.48	0.26	7.35	no	no
EXPLOSIVES (ug/l)								
AMINO-DNTS	6.75	6.75	1.47		1.46	77646.01	yes	yes
RDX	2.95	3.15	6.66		1.80	6.17E+08	yes	yes

RISK TABLES
SHALLOW GROUNDWATER - STATISTICAL SUMMARY
DISSOLVED INORGANICS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL	DATA IS NORMALLY DISTRIBUTED (W TEST)	DATA IS LOG NORMALLY DISTRIBUTED (W TEST)
DISSOLVED INORGANICS (ug/l)								
ALUMINUM	328.88	337.49	725.93	5.22	1.34	13680164.98	yes	yes
BARIUM	41.55	24.60	70.49	3.52	0.84	2494.59	yes	yes
CALCIUM	4122.50	1306.07	5659.09	8.28	0.38	10102.79	yes	yes
COBALT	3.50	1.68	5.47	1.10	0.73	84.65	no	no
IRON	2515.00	1908.17	4759.96	7.65	0.66	29943.17	yes	yes
MAGNESIUM	1020.25	555.29	1673.54	6.73	0.83	57269.17	yes	yes
MANGANESE	14.38	4.52	19.69	2.63	0.33	30.52	yes	yes
NICKEL	3.58	1.78	5.67	1.11	0.75	92.68	yes	yes
POTASSIUM	313.25	238.80	594.20	5.46	0.93	44722.15	yes	yes
SELENIUM	1.95	0.90	3.01	0.60	0.39	4.84	no	no
SODIUM	3355.00	1338.89	4930.21	8.05	0.42	10802.05	yes	yes
VANADIUM	0.68	0.35	1.09	-0.47	0.44	2.26	no	no

RISK TABLES
SEDIMENT - STATISTICAL SUMMARY
ORGANIC COMPOUNDS
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL	DATA IS NORMALLY DISTRIBUTED (W TEST)	DATA IS LOG NORMALLY DISTRIBUTED (W TEST)
VOLATILES (ug/kg)								
TOLUENE	5.70	1.52	7.15	1.70	0.34	9.09	no	no
SEMIVOLATILES (ug/kg)								
BIS(2-ETHYLHEXYL)PHTHALATE	189.00	39.27	226.45	5.22	0.24	255.68	no	no
DI-N-OCTYLPHTHALATE	193.00	30.54	222.12	5.25	0.18	235.31	yes	no

RISK TABLES
SEDIMENT - STATISTICAL SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 11, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL	DATA IS NORMALLY DISTRIBUTED (W TEST)	DATA IS LOG NORMALLY DISTRIBUTED (W TEST)
TOTAL INORGANICS (mg/kg)								
ALUMINUM	4122.00	1374.25	5432.29	8.28	0.34	6516.83	yes	yes
ARSENIC	3.77	2.94	6.57	1.04	0.88	29.54	yes	yes
BARIUM	44.42	17.39	61.00	3.73	0.39	76.14	yes	yes
CADMIUM	0.27	0.19	0.45	-1.54	0.74	1.26	no	no
CALCIUM	1266.40	547.34	1788.27	7.06	0.45	2513.91	yes	yes
CHROMIUM	4.44	2.48	6.80	1.36	0.57	11.72	yes	yes
COBALT	2.24	1.68	3.84	0.54	0.84	16.04	yes	yes
COPPER	14.28	8.92	22.79	2.52	0.58	38.44	yes	yes
IRON	7190.00	5819.63	12738.78	8.57	0.92	76601.98	yes	yes
LEAD	13.20	4.42	17.41	2.53	0.34	21.02	yes	yes
MAGNESIUM	267.60	79.23	343.14	5.55	0.30	402.43	yes	yes
MANGANESE	67.54	55.93	120.87	3.90	0.90	553.09	no	yes
NICKEL	3.04	1.21	4.20	1.05	0.41	5.64	yes	yes
POTASSIUM	195.80	45.37	239.06	5.26	0.23	261.07	yes	yes
SELENIUM	0.47	0.22	0.68	-0.82	0.38	0.79	no	no
SILVER	0.59	0.48	1.04	-0.85	0.93	6.44	yes	yes
VANADIUM	9.52	4.44	13.76	2.16	0.48	19.80	yes	yes
ZINC	32.02	20.08	51.16	3.27	0.74	156.30	yes	yes

STATISTICAL SUMMARY
SURFACE SOIL
ORGANIC COMPOUNDS
SITE 17 PROPER, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL	DATA IS NORMALLY DISTRIBUTED (W TEST)	DATA IS LOG NORMALLY DISTRIBUTED (W TEST)
SEMIVOLATILES (ug/kg)								
NAPHTHALENE	202.45	44.38	219.61	5.27	0.33	238.53	no	no
ACENAPHTHENE	202.30	44.91	219.66	5.27	0.34	240.06	no	no
DIBENZOFURAN	201.90	46.34	219.82	5.26	0.38	244.99	no	no
FLUORENE	202.35	44.73	219.64	5.27	0.34	239.54	no	no
PHENANTHRENE	228.30	107.66	269.92	5.35	0.41	278.11	no	no
ANTHRACENE	204.65	37.13	219.01	5.30	0.21	225.03	yes	no
CARBAZOLE	194.65	58.54	217.28	5.18	0.56	274.38	no	no
FLUORANTHENE	195.25	108.00	237.00	5.12	0.60	271.05	no	no
PYRENE	186.95	91.87	222.47	5.10	0.56	253.24	no	no
BENZO(A)ANTHRACENE	181.20	64.05	205.96	5.10	0.52	244.89	no	no
CHRYSENE	169.85	76.62	199.47	4.99	0.61	245.30	yes	no
BIS(2-ETHYLHEXYL)PHTHALATE	223.70	263.79	325.68	5.07	0.81	356.09	no	no
BENZO(B)FLUORANTHENE	173.15	69.59	200.06	5.05	0.52	230.28	yes	no
BENZO(K)FLUORANTHENE	175.90	68.76	202.48	5.05	0.59	247.44	no	no
BENZO(A)PYRENE	191.10	47.60	209.50	5.21	0.34	225.22	no	no
INDENO(1,2,3-CD)PYRENE	189.95	51.31	209.79	5.19	0.37	228.40	no	no
BENZO(G,H,I)PERYLENE	189.60	51.76	209.61	5.19	0.37	227.61	no	no
PESTICIDES/PCBS (ug/kg)								
DIELDRIN	3.01	4.50	4.75	0.75	0.74	4.23	no	no
4,4'-DDE	2.64	4.61	4.42	0.47	0.87	3.93	no	no
ENDRIN	3.02	4.48	4.75	0.81	0.57	3.50	no	no
4,4'-DDT	2.53	4.96	4.45	0.11	1.15	5.01	no	yes
METHOXYCHLOR	14.84	23.83	24.05	2.09	1.10	33.04	no	no
ENDRIN KETONE	2.74	4.60	4.52	0.43	1.08	6.09	no	no
ALPHA-CHLORDANE	1.51	2.24	2.38	0.09	0.65	1.90	no	no

STATISTICAL SUMMARY
SURFACE SOIL
TOTAL INORGANICS
SITE 17 PROPER, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL	DATA IS NORMALLY DISTRIBUTED (W TEST)	DATA IS LOG NORMALLY DISTRIBUTED (W TEST)
TOTAL INORGANICS (mg/kg)								
ALUMINUM	4559.00	1413.97	5105.66	8.38	0.30	5233.85	no	yes
ARSENIC	2.49	1.16	2.93	0.82	0.44	3.08	no	yes
BARIUM	21.23	7.01	23.94	3.00	0.34	24.83	yes	yes
CALCIUM	1308.75	1740.11	1981.50	6.56	1.08	2803.85	no	yes
CHROMIUM	6.46	3.05	7.63	1.78	0.41	7.82	no	yes
COBALT	1.25	0.74	1.54	0.05	0.62	1.77	no	yes
COPPER	4.09	5.65	6.27	1.08	0.67	5.25	no	no
IRON	5411.00	2508.64	6380.88	8.51	0.42	6596.98	no	yes
LEAD	9.15	4.48	10.88	2.09	0.53	12.11	yes	yes
MAGNESIUM	426.80	255.32	525.51	5.94	0.46	526.22	no	no
MANGANESE	84.84	72.35	112.81	4.14	0.80	138.67	no	yes
MERCURY	0.08	0.05	0.10	-2.78	0.70	0.11	no	no
NICKEL	3.10	1.34	3.61	1.05	0.41	3.78	yes	yes
POTASSIUM	280.20	229.51	368.93	5.39	0.72	421.94	no	yes
SELENIUM	0.49	0.30	0.61	-0.82	0.43	0.59	no	no
VANADIUM	11.93	3.92	13.44	2.43	0.33	13.87	yes	yes
ZINC	15.30	11.35	19.69	2.46	0.75	23.63	no	yes
CYANIDE, TOTAL	0.11	0.05	0.13	-2.27	0.36	0.13	no	no

STATISTICAL SUMMARY
SURFACE SOIL
ORGANIC COMPOUNDS
SITE 17 SOIL AREA OF CONCERN, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL	DATA IS NORMALLY DISTRIBUTED (W TEST)	DATA IS LOG NORMALLY DISTRIBUTED (W TEST)
SEMIVOLATILES (ug/kg)								
NAPHTHALENE	400.00	280.59	730.12	5.82	0.65	4584.78	yes	yes
2-METHYLNAPHTHALENE	285.50	348.85	695.93	5.10	1.21	812778.33	yes	yes
ACENAPHTHYLENE	1148.75	1182.87	2540.39	6.58	1.17	2684044.98	yes	yes
ACENAPHTHENE	257.50	115.29	393.14	5.49	0.39	625.66	no	no
DIBENZOFURAN	397.50	280.76	727.81	5.82	0.65	4520.31	yes	yes
FLUORENE	307.50	174.05	512.26	5.59	0.62	3241.32	yes	yes
PHENANTHRENE	1882.50	1905.72	4124.58	6.98	1.34	83100767.87	yes	yes
ANTHRACENE	605.00	423.52	1103.27	6.18	0.80	18942.79	yes	yes
CARBAZOLE	280.00	174.16	484.90	5.52	0.52	1527.71	no	yes
FLUORANTHENE	2852.50	2533.71	5833.41	7.46	1.32	107181469.81	yes	yes
PYRENE	3592.50	4060.32	8369.47	7.56	1.47	480717762.27	yes	yes
BENZO(A)ANTHRACENE	2365.00	2819.14	5681.72	7.08	1.52	3375031929.45	yes	yes
CHRYSENE	2745.00	3305.16	6633.52	7.22	1.54	4503624940.72	yes	yes
BIS(2-ETHYLHEXYL)PHTHALATE	243.75	102.26	364.05	5.44	0.37	572.66	yes	yes
BENZO(B)FLUORANTHENE	3197.50	3669.70	7514.90	7.37	1.59	8803217204.16	yes	yes
BENZO(K)FLUORANTHENE	1078.50	1305.96	2614.96	6.34	1.42	89354862.92	yes	yes
BENZO(A)PYRENE	3235.00	4270.00	8258.66	7.19	1.76	4.41E+11	yes	yes
INDENO(1,2,3-CD)PYRENE	1486.75	1921.59	3747.49	6.49	1.63	5943393172.99	yes	yes
DIBENZO(A,H)ANTHRACENE	630.00	725.63	1483.70	5.99	1.07	696561.35	yes	yes
BENZO(G,H,I)PERYLENE	1711.75	2250.10	4358.99	6.57	1.71	14452807667.60	yes	yes
PESTICIDES/PCBS (ug/kg)								
4,4'-DDE	21.46	23.45	49.05	1.77	2.38	1.68E+15	yes	yes
4,4'-DDT	8.01	7.33	16.64	1.66	1.12	13165.62	yes	yes

STATISTICAL SUMMARY
SURFACE SOIL
TOTAL INORGANICS
SITE 17 SOIL AREA OF CONCERN, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL	DATA IS NORMALLY DISTRIBUTED (W TEST)	DATA IS LOG NORMALLY DISTRIBUTED (W TEST)
TOTAL INORGANICS (mg/kg)								
ALUMINUM	4675.00	558.36	5331.91	8.44	0.12	5665.94	yes	yes
ARSENIC	3.15	0.35	3.56	1.14	0.11	3.77	yes	yes
BARIUM	27.00	3.79	31.46	3.29	0.14	33.98	yes	yes
BERYLLIUM	0.17	0.08	0.26	-1.87	0.42	0.53	no	no
CALCIUM	1162.75	445.37	1686.73	7.01	0.37	2709.78	yes	yes
CHROMIUM	7.80	1.80	9.92	2.03	0.24	12.36	yes	yes
COBALT	1.78	0.56	2.43	0.54	0.32	3.77	yes	yes
COPPER	3.83	1.73	5.85	1.27	0.43	12.47	yes	yes
IRON	5647.50	1489.10	7399.43	8.61	0.26	9365.57	yes	yes
LEAD	24.83	3.88	29.38	3.20	0.16	32.07	yes	yes
MAGNESIUM	433.25	97.67	548.16	6.05	0.23	677.19	yes	yes
MANGANESE	141.45	46.15	195.74	4.91	0.33	303.95	yes	yes
MERCURY	0.08	0.05	0.13	-2.70	0.61	0.79	yes	yes
NICKEL	3.65	0.93	4.75	1.27	0.26	6.02	yes	yes
POTASSIUM	316.00	83.32	414.02	5.73	0.28	541.94	yes	yes
VANADIUM	12.15	2.34	14.90	2.48	0.20	16.76	yes	yes
ZINC	51.38	48.71	108.68	3.67	0.79	1464.04	no	yes
CYANIDE, TOTAL	0.12	0.05	0.17	-2.22	0.38	0.27	no	no

STATISTICAL SUMMARY
SHALLOW SUBSURFACE SOIL
ORGANIC COMPOUNDS
SITE 17 PROPER, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL	DATA IS NORMALLY DISTRIBUTED (W TEST)	DATA IS LOG NORMALLY DISTRIBUTED (W TEST)
VOLATILES (ug/kg)								
TOLUENE	4.57	1.24	5.48	1.48	0.29	5.94	yes	yes
SEMIVOLATILES (ug/kg)								
PHENOL	168.29	43.13	199.96	5.08	0.35	238.32	no	no
4-METHYLPHENOL	183.57	9.88	190.83	5.21	0.05	191.06	no	no
ACENAPHTHYLENE	141.43	75.19	196.64	4.71	0.88	560.44	no	no
ANTHRACENE	134.86	77.15	191.52	4.59	1.03	1065.94	no	no
DI-N-BUTYLPHTHALATE	58.14	57.92	100.68	3.73	0.81	180.38	no	yes
FLUORANTHENE	135.29	58.69	178.39	4.79	0.57	264.77	no	no
PYRENE	132.29	59.52	175.99	4.77	0.55	249.30	no	no
BENZO(A)ANTHRACENE	119.57	73.93	173.86	4.55	0.80	398.55	no	no
CHRYSENE	100.14	73.50	154.12	4.34	0.81	330.80	no	yes
BIS(2-ETHYLHEXYL) PHTHALATE	75.00	79.14	133.12	3.90	0.93	310.69	no	no
BENZO(B)FLUORANTHENE	123.43	77.85	180.60	4.56	0.85	445.44	no	no
BENZO(K)FLUORANTHENE	123.43	77.53	180.37	4.57	0.82	423.31	no	no
BENZO(A)PYRENE	125.14	75.68	180.72	4.60	0.78	373.54	no	no
INDENO(1,2,3-CD) PYRENE	169.57	53.54	208.89	5.06	0.49	290.71	no	no
BENZO(G,H,I)PERYLENE	169.71	53.17	208.76	5.06	0.48	288.42	no	no

STATISTICAL SUMMARY
SHALLOW SUBSURFACE SOIL
INORGANIC COMPOUNDS
SITE 17 PROPER, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL	DATA IS NORMALLY DISTRIBUTED (W TEST)	DATA IS LOG NORMALLY DISTRIBUTED (W TEST)
TOTAL INORGANICS (mg/kg)								
ALUMINUM	2551.43	661.05	3036.89	7.82	0.26	3217.01	yes	yes
ARSENIC	1.81	0.97	2.53	0.45	0.62	3.94	yes	yes
BARIUM	19.30	10.34	26.89	2.86	0.45	30.44	no	yes
CADMIUM	0.60	0.27	0.80	-0.58	0.40	0.91	no	no
CALCIUM	1359.43	2264.55	3022.48	6.23	1.52	64780.10	no	yes
CHROMIUM	3.70	0.77	4.27	1.29	0.22	4.50	yes	yes
COPPER	2.46	1.50	3.57	0.73	0.66	5.63	yes	yes
IRON	3594.29	916.91	4267.65	8.16	0.23	4383.94	no	yes
LEAD	6.83	4.07	9.82	1.76	0.61	14.61	yes	yes
MAGNESIUM	174.86	90.57	241.37	5.08	0.42	267.30	no	yes
MANGANESE	51.36	48.71	87.13	3.52	0.99	248.31	no	yes
MERCURY	0.05	0.02	0.06	-3.20	0.51	0.08	yes	yes
POTASSIUM	172.14	117.99	258.79	4.98	0.59	329.59	no	no
SODIUM	21.84	39.84	51.10	2.27	1.12	137.29	no	no
VANADIUM	4.21	1.01	4.95	1.42	0.23	5.17	yes	yes
ZINC	10.99	9.47	17.94	2.05	0.92	47.28	yes	yes

RISK TABLES
SUBSURFACE SOIL - STATISTICAL SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL	DATA IS NORMALLY DISTRIBUTED (W TEST)	DATA IS LOG NORMALLY DISTRIBUTED (W TEST)
TOTAL INORGANICS (mg/kg)								
ALUMINUM	3331.82	1463.41	4131.33	8.02	0.44	4572.61	yes	yes
ARSENIC	2.34	0.92	2.84	0.76	0.45	3.26	yes	yes
BARIUM	9.82	7.77	14.06	2.06	0.67	16.50	no	yes
CALCIUM	474.15	781.71	901.23	5.23	1.29	2251.96	no	no
CHROMIUM	6.80	2.22	8.02	1.86	0.35	8.59	yes	yes
COBALT	1.20	1.06	1.78	-0.17	0.90	3.00	no	yes
COPPER	1.38	0.80	1.82	0.18	0.56	2.12	no	yes
IRON	4554.55	1931.99	5610.06	8.33	0.45	6317.10	yes	yes
LEAD	3.89	2.04	5.01	1.25	0.48	5.46	no	yes
MAGNESIUM	419.91	178.22	517.28	5.96	0.42	566.45	yes	yes
MANGANESE	22.47	22.96	35.02	2.63	1.04	75.86	no	yes
MERCURY	0.03	0.01	0.04	-3.42	0.27	0.04	no	no
NICKEL	2.09	1.13	2.71	0.61	0.51	3.07	no	no
POTASSIUM	487.10	223.13	609.00	6.03	0.68	896.63	yes	no
SELENIUM	0.41	0.12	0.47	-0.93	0.23	0.47	no	no
VANADIUM	8.83	3.16	10.55	2.11	0.38	11.43	yes	yes
ZINC	10.35	8.03	14.73	2.09	0.73	19.32	no	yes

RISK TABLES
GROUNDWATER - STATISTICAL SUMMARY
TOTAL INORGANICS AND CYANIDE
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL	DATA IS NORMALLY DISTRIBUTED (W TEST)	DATA IS LOG NORMALLY DISTRIBUTED (W TEST)
TOTAL INORGANICS (ug/l)								
ALUMINUM	216.41	181.64	389.60	4.96	1.12	7769.38	yes	yes
ARSENIC	4.40	6.04	10.16	0.96	0.99	48.59	no	no
BARIUM	20.66	21.89	41.53	2.62	1.00	259.34	yes	yes
CALCIUM	46982.00	74971.51	118464.29	10.01	1.19	1603875.73	no	no
IRON	969.80	1535.35	2433.69	5.72	1.90	14134188.18	no	yes
MAGNESIUM	2422.20	3394.30	5658.53	7.09	1.30	285934.25	no	yes
MANGANESE	40.34	55.44	93.20	2.30	2.06	13652647.77	yes	no
NICKEL	1.24	0.54	1.75	0.16	0.35	1.99	no	no
POTASSIUM	1227.20	1368.44	2531.95	6.70	0.97	14193.45	no	yes
SODIUM	4900.00	5570.98	10211.71	8.00	1.08	136961.32	yes	yes
VANADIUM	1.00	0.50	1.48	-0.12	0.55	2.58	yes	yes

RISK TABLES
GROUNDWATER - STATISTICAL SUMMARY
DISSOLVED INORGANICS
SITE 17, CTO-0354
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL	DATA IS NORMALLY DISTRIBUTED (W TEST)	DATA IS LOG NORMALLY DISTRIBUTED (W TEST)
DISSOLVED INORGANICS (ug/l)								
ALUMINUM-DISS	52.27	61.51	110.91	3.50	1.02	1188.03	no	yes
BARIUM-DISS	20.20	22.16	41.32	2.56	1.06	537.70	yes	yes
CALCIUM-DISS	47324.00	76442.34	120208.66	10.00	1.20	1672695.05	no	no
IRON-DISS	838.78	1570.61	2336.30	4.41	2.72	6.16E+11	no	yes
MAGNESIUM-DISS	2410.00	3451.99	5701.34	7.05	1.33	311915.09	no	yes
MANGANESE-DISS	40.38	55.08	92.89	2.28	2.08	16083920.15	yes	no
NICKEL-DISS	1.34	0.76	2.06	0.20	0.44	2.59	no	no
POTASSIUM-DISS	1224.20	1400.42	2559.45	6.68	0.99	14618.71	no	yes
SODIUM-DISS	4854.00	5478.94	10077.94	8.01	1.07	129547.44	no	yes
VANADIUM-DISS	0.68	0.40	1.06	-0.49	0.46	1.35	no	no

APPENDIX I
CHEMICAL INTAKE EQUATIONS FOR THE HUMAN HEALTH RISK ASSESSMENT

I1.1 Surface Soil, Shallow Subsurface Soil, Subsurface Soil, and Sediment

Accidental Ingestion of Soil/Sediment

The daily intake associated with the potential accidental ingestion of COPCs detected in soil or sediment was calculated using the following equation (USEPA, 1989b):

$$CDI = \frac{Cs \times IR \times FI \times CF \times EF \times ED}{BW \times AT}$$

Where:

CDI	=	Chronic Daily Intake, milligram per kilogram day (mg/kg-day)
Cs	=	Chemical concentration in soil or sediment, mg/kg
IR	=	Ingestion rate, mg/day
FI	=	Fraction Ingested, unitless
CF	=	Conversion factor, 10^{-6} kg/mg
EF	=	Frequency of exposure, days/year
ED	=	Exposure duration, years
BW	=	Average body weight, kg
AT	=	Averaging time, days

CDI calculations using the above equation are presented in Appendix J.

Dermal Contact with Soil/Sediment

The absorbed dose associated with the potential dermal contact of COPCs in soil and sediment was calculated using the following equation (USEPA, 1989b):

$$DAD = \frac{CS \times AF \times ABS \times CF \times SA \times EF \times ED}{BW \times AT}$$

Where:

DAD	=	Dermally absorbed dose, mg/kg-day
CS	=	Chemical concentration in the soil or sediment, mg/kg
AF	=	Adherence factor, milligram per square centimeter day ($mg/cm^2 \cdot d$)
ABS	=	Absorbed fraction, unitless
CF	=	Conversion factor, 10^{+6} mg/kg
SA	=	Surface area of exposed skin, cm^2
EF	=	Exposure frequency, days/year
ED	=	Exposure duration, years
BW	=	Average body weight, kg
AT	=	Averaging time, days

CDI calculations using the above equation are presented in Appendix J.

Inhalation of Fugitive Dust

The daily intake resulting from the inhalation of soil COPCs adsorbed onto fugitive dust particulates was estimated using the following equation (USEPA, 1989b):

$$CDI = \frac{Ca \ x \ RR \ x \ ET \ x \ EF \ x \ ED}{BW \ x \ AT}$$

Where:

CDI	=	Chronic Daily Intake, mg/kg-day
Ca	=	Chemical concentration in air as fugitive dust,(mg/m^3)
RR	=	Respiration rate, m^3/day
ET	=	Exposure time, hours/day
EF	=	Frequency of exposure, days/year
ED	=	Exposure duration, years
BW	=	Average body weight, kg
AT	=	Averaging time, days

The air concentration (Ca) of a chemical in fugitive dust emissions was estimated from the following equation, as determined by Cowherd (1985), and provided by the USEPA (1991b).

$$Ca = Cs \ x \ 1/PEF$$

Where:

Cs	=	Concentration of chemical in the soil, mg/kg
PEF	=	Particulate emission factor, 4.63 x 10^{+9} m^3/kg

CDI calculations using the above equations are presented in Appendix J.

I1.2 Groundwater

Ingestion of Non-Potable Groundwater During Beneficial Use

The daily intake associated with the direct potential ingestion of the COPCs in groundwater under a beneficial, non-potable use scenario was calculated using the following equation (USEPA, 1989b):

$$CDI = \frac{Cw \ x \ IR \ x \ EF \ x \ ED}{BW \ x \ AT}$$

Where:

CDI	=	Chronic Daily Intake, mg/kg-day
Cw	=	Chemical concentration in groundwater, mg/L
IR	=	Ingestion rate, L/day
EF	=	Frequency of exposure, days/year
ED	=	Exposure duration, years
BW	=	Average body weight, kg
AT	=	Averaging time, days

Dermal Contact with Groundwater During Beneficial Use

The absorbed dose associated with potential dermal contact with COPCs in groundwater used during beneficial use activities was calculated using the following equation (USEPA, 1989b):

$$DAD = \frac{Cw \ x \ SA \ x \ PC \ x \ ET \ x \ EF \ x \ ED \ x \ CF}{BW \ x \ AT}$$

Where:

DAD	=	Dermally absorbed dose, mg/kg-day
Cw	=	Concentration in water, mg/L
SA	=	Surface area of exposed skin, cm^2
PC	=	Permeability constant, cm/hr
ET	=	Exposure time, hours/day
EF	=	Exposure frequency, days/year
ED	=	Exposure duration, years
CF	=	Conversion factor, 10^{-3} L/cm^3
BW	=	Average body weight, kg
AT	=	Averaging time, days

APPENDIX J
HUMAN HEALTH RISK ASSESSMENT CALCULATION SPREADSHEETS

TABLE
CURRENT ADULT AND ADOLESCENT TRESPASSERS
ACCIDENTAL INGESTION OF SITE 11 SURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cs*IR*CF*FI*EF*ED)/(BW*AT)
ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	Adult	Older Child (7-15 Yrs Old)	
CDI	Chronic daily intake (mg/kg/d)	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	
HQ	Hazard quotient	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	CS	
IR	Ingestion Rate (mg/d)	100	200	
CF	Conversion factor (kg/mg)	1E-06	1E-06	
FI	Fraction of soil ingested from site	0.5	0.5	
EF	Exposure Frequency (d/yr)	26	26	
ED	Exposure Duration (yrs)	30	9	
BW	Body weight (kg)	70	37	
ATc	Averaging time, carcinogens (d)	25550	25550	
ATn	Averaging time, noncarcinogens (d)	10950	3285	

				Adult Trespassers						Adolescent Trespassers					
				Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Aluminum	6504.27	NA	1.00E+00	2.8E-04	--	--	6.6E-04	6.6E-04	9.7%	3.2E-04	--	--	2.5E-03	2.5E-03	9.7%
Arsenic	5.65	1.50E+00	3.00E-04	2.5E-07	3.7E-07	100.0%	5.7E-07	1.9E-03	28.0%	2.8E-07	4.2E-07	100.0%	2.2E-06	7.3E-03	28.0%
Chromium	16.92	NA	5.00E-03	7.4E-07	--	--	1.7E-06	3.4E-04	5.0%	8.4E-07	--	--	6.5E-06	1.3E-03	5.0%
Iron	9909.69	NA	3.00E-01	4.3E-04	--	--	1.0E-03	3.4E-03	49.2%	4.9E-04	--	--	3.8E-03	1.3E-02	49.2%
Manganese	125.17	NA	2.30E-02	5.5E-06	0.0E+00	0.0%	1.3E-05	5.5E-04	8.1%	6.2E-06	--	--	4.8E-05	2.1E-03	8.1%
				Total ILCR:	3.7E-07	100.0%	HI:	6.8E-03	100.0%	Total ILCR:	4.2E-07	0.0%	HI:	2.6E-02	91.9%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
CURRENT ADULT AND ADOLESCENT TRESPASSERS
DERMAL CONTACT WITH SITE 11 SURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF DERMAL ABSORBED DOSES (DADs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cs*CF*AF*ABS*SA*EF*ED)/(BW*AT)
ILCR = CDI*CSFo Adj CSF Adj = CSF/AE
HQ = CDI/RfDo Adj RfD Adj = RfD*AE

Parameter	Description	Adult	Older Child (7-15 Yrs Old)	
DAD	Dermally absorbed dose (mg/kg/d)	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	
HQ	Hazard quotient	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	CS	
CF	Conversion factor (kg/mg)	1E-06	1E-06	
AF	Soil to skin adherence factor (mg/cm2-event)	1	1	
ABS	Absorption fraction	CS	CS	
SA	Skin surface area available for contact (cm2)	5300	3925	
EF	Exposure Frequency (d/yr)	26	26	
ED	Exposure Duration (yrs)	30	9	
BW	Body weight (kg)	70	37	
ATc	Averaging time, carcinogens (d)	25550	25550	
ATn	Averaging time, noncarcinogens (d)	10950	3285	
AE	Adjustment for Absorptin Efficiency	CS	CS	

								Adult Trespassers						Adolescent Trespassers					
								Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	ABS	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	AE	Adj. CSFo 1/(mg/kg/d)	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI
Aluminum	6504.27	0.01	NA	1.00E+00	0.2	NA	2.00E-01	1.5E-04	0.0E+00	0.0%	3.5E-04	1.8E-03	8.8%	6.3E-05	0.0E+00	0.0%	4.9E-04	2.5E-03	8.8%
Arsenic	5.65	0.03	1.50E+00	3.00E-04	0.95	1.58E+00	2.85E-04	3.9E-07	6.2E-07	100.0%	9.1E-07	3.2E-03	16.1%	1.6E-07	2.6E-07	100.0%	1.3E-06	4.5E-03	16.1%
Chromium	16.92	0.01	NA	5.00E-03	0.2	NA	5.00E-03	3.9E-07	0.0E+00	0.0%	9.1E-07	1.8E-04	0.9%	1.6E-07	0.0E+00	0.0%	1.3E-06	2.6E-04	0.9%
Iron	9909.69	0.01	NA	3.00E-01	0.2	NA	6.00E-02	2.3E-04	--	0.0%	5.3E-04	8.9E-03	44.7%	9.6E-05	--	0.0%	7.5E-04	1.2E-02	44.7%
Manganese	125.17	0.01	NA	2.30E-02	0.05	NA	1.15E-03	2.9E-06	--	0.0%	6.8E-06	5.9E-03	29.5%	1.2E-06	--	0.0%	9.5E-06	8.2E-03	29.5%
								Total ILCR:	6.2E-07	100.0%	HI:	2.0E-02	100.0%	Total ILCR:	2.6E-07	100.0%	HI:	2.8E-02	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
CURRENT ADULT AND ADOLESCENT TRESPASSERS
ACCIDENTAL INGESTION OF SITE 11 SEDIMENTS
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cs*IR*CF*FI*EF*ED)/(BW*AT)
ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	Adult	Older Child (7-15 Yrs Old)	
CDI	Chronic daily intake (mg/kg/d)	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	
HQ	Hazard quotient	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	CS	
IR	Ingestion Rate (mg/d)	100	200	
CF	Conversion factor (kg/mg)	1E-06	1E-06	
FI	Fraction of soil ingested from site	0.5	0.5	
EF	Exposure Frequency (d/yr)	26	26	
ED	Exposure Duration (yrs)	30	9	
BW	Body weight (kg)	70	37	
ATc	Averaging time, carcinogens (d)	25550	25550	
ATn	Averaging time, noncarcinogens (d)	10950	3285	

				Adult Trespassers						Adolescent Trespassers					
				Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Arsenic	6.57	1.50E+00	3.00E-04	2.9E-07	4.3E-07	100.0%	6.7E-07	2.2E-03	34.0%	3.3E-07	4.9E-07	100.0%	2.5E-06	8.4E-03	34.0%
Iron	12738.78	NA	3.00E-01	5.6E-04	--	--	1.3E-03	4.3E-03	66.0%	6.3E-04	--	--	4.9E-03	1.6E-02	66.0%
				Total ILCR:	4.3E-07	100.0%	HI:	6.5E-03	100.0%	Total ILCR:	4.9E-07	100.0%	HI:	2.5E-02	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
CURRENT ADULT AND ADOLESCENT TRESPASSERS
DERMAL CONTACT WITH SITE 11 SEDIMENTS
RME EXPOSURE SCENARIO
SUMMARY OF DERMAL ABSORBED DOSES (DADs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cs*CF*AF*ABS*SA*EF*ED)/(BW*AT)
ILCR = CDI*CSFo Adj CSF Adj = CSF/AE
HQ = CDI/RfDo Adj RfD Adj = RfD*AE

Parameter	Description	Adult	Older Child (7-15 Yrs Old)	
DAD	Dermally absorbed dose (mg/kg/d)	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	
HQ	Hazard quotient	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	CS	
CF	Conversion factor (kg/mg)	1E-06	1E-06	
AF	Soil to skin adherence factor (mg/cm2-event)	1	1	
ABS	Absorption fraction	CS	CS	
SA	Skin surface area available for contact (cm2)	5300	3925	
EF	Exposure Frequency (d/yr)	26	26	
ED	Exposure Duration (yrs)	30	9	
BW	Body weight (kg)	70	37	
ATc	Averaging time, carcinogens (d)	25550	25550	
ATn	Averaging time, noncarcinogens (d)	10950	3285	
AE	Adjustment for Absorptin Efficiency	CS	CS	

								Adult Trespassers						Adolescent Trespassers					
								Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	ABS	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	AE	Adj. CSFo 1/(mg/kg/d)	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI
Arsenic	6.57	0.03	1.50E+00	3.00E-04	0.95	1.58E+00	2.85E-04	4.6E-07	7.2E-07	100.0%	1.1E-06	3.7E-03	62.0%	1.9E-07	3.0E-07	100.0%	1.5E-06	5.2E-03	62.0%
Iron	12738.78	0.01	NA	3.00E-01	0.5	NA	3.00E-01	2.9E-04	0.0E+00	0.0%	6.9E-04	2.3E-03	38.0%	1.2E-04	0.0E+00	0.0%	9.6E-04	3.2E-03	38.0%
								Total ILCR:	7.2E-07	100.0%	HI:	6.0E-03	100.0%	Total ILCR:	3.0E-07	100.0%	HI:	8.4E-03	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
CURRENT ADULT AND ADOLESCENT TRESPASSERS
ACCIDENTAL INGESTION OF SITE 17 (PROPER) SURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cs*IR*CF*FI*EF*ED)/(BW*AT)
ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	Adult	Older Child (7-15 Yrs Old)	
CDI	Chronic daily intake (mg/kg/d)	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	
HQ	Hazard quotient	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	CS	
IR	Ingestion Rate (mg/d)	100	100	
CF	Conversion factor (kg/mg)	1E-06	1E-06	
FI	Fraction of soil ingested from site	0.5	0.5	
EF	Exposure Frequency (d/yr)	26	26	
ED	Exposure Duration (yrs)	30	9	
BW	Body weight (kg)	70	37	
ATc	Averaging time, carcinogens (d)	25550	25550	
ATn	Averaging time, noncarcinogens (d)	10950	3285	

				Adult Trespassers						Adolescent Trespassers					
				Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)pyrene	0.20	7.30E+00	NA	4.4E-09	3.2E-08	24.9%	1.0E-08	--	0.0%	2.5E-09	1.8E-08	24.9%	1.9E-08	--	0.0%
Aluminum	5105.66	NA	1.00E+00	1.1E-04	0.0E+00	0.0%	2.6E-04	2.6E-04	12.4%	6.3E-05	0.0E+00	0.0%	4.9E-04	4.9E-04	12.4%
Arsenic	2.93	1.50E+00	3.00E-04	6.4E-08	9.6E-08	75.1%	1.5E-07	5.0E-04	23.8%	3.6E-08	5.4E-08	75.1%	2.8E-07	9.4E-04	23.8%
Iron	6360.88	NA	3.00E-01	1.4E-04	0.0E+00	0.0%	3.2E-04	1.1E-03	51.8%	7.9E-05	0.0E+00	0.0%	6.1E-04	2.0E-03	51.8%
Manganese	112.81	NA	2.30E-02	2.5E-06	--	--	5.7E-06	2.5E-04	11.9%	1.4E-06	--	--	1.1E-05	4.7E-04	11.9%
				Total ILCR:	1.3E-07	100.0%		HI:	2.1E-03	100.0%	Total ILCR:	7.2E-08	100.0%	HI:	4.0E-03	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
CURRENT ADULT AND ADOLESCENT TRESPASSERS
ACCIDENTAL INGESTION OF SITE 17 (SOIL AOC) SURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cs*IR*CF*FI*EF*ED)/(BW*AT)
ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	Adult	Older Child (7-15 Yrs Old)	
CDI	Chronic daily intake (mg/kg/d)	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	
HQ	Hazard quotient	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	CS	
IR	Ingestion Rate (mg/d)	100	100	
CF	Conversion factor (kg/mg)	1E-06	1E-06	
FI	Fraction of soil ingested from site	0.5	0.5	
EF	Exposure Frequency (d/yr)	26	26	
ED	Exposure Duration (yrs)	30	9	
BW	Body weight (kg)	70	37	
ATc	Averaging time, carcinogens (d)	25550	25550	
ATn	Averaging time, noncarcinogens (d)	10950	3285	

				Adult Trespassers						Adolescent Trespassers					
				Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)anthracene	5.68	7.30E-01	NA	1.2E-07	9.0E-08	4.7%	2.9E-07	--	0.0%	7.0E-08	5.1E-08	4.7%	5.5E-07	--	0.0%
Benzo(a)pyrene	8.26	7.30E+00	NA	1.8E-07	1.3E-06	67.9%	4.2E-07	--	0.0%	1.0E-07	7.5E-07	67.9%	7.9E-07	--	0.0%
Benzo(b)fluoranthene	7.51	7.30E-01	NA	1.6E-07	1.2E-07	6.2%	3.8E-07	--	0.0%	9.3E-08	6.8E-08	6.2%	7.2E-07	--	0.0%
Dibenzo(a,h)anthracene	1.48	7.30E+00	NA	3.2E-08	2.4E-07	12.2%	7.5E-08	--	0.0%	1.8E-08	1.3E-07	12.2%	1.4E-07	--	0.0%
Indeno(1,2,3-cd)pyrene	3.75	7.30E-01	NA	8.2E-08	6.0E-08	3.1%	1.9E-07	--	0.0%	4.6E-08	3.4E-08	3.1%	3.6E-07	--	0.0%
Arsenic	3.50	1.50E+00	3.00E-04	7.6E-08	1.1E-07	5.9%	1.8E-07	5.9E-04	26.1%	4.3E-08	6.5E-08	5.9%	3.4E-07	1.1E-03	26.1%
Iron	7380.00	NA	3.00E-01	1.6E-04	0.0E+00	0.0%	3.8E-04	1.3E-03	55.0%	9.1E-05	0.0E+00	0.0%	7.1E-04	2.4E-03	55.0%
Manganese	194.00	NA	2.30E-02	4.2E-06	--	--	9.9E-06	4.3E-04	18.9%	2.4E-06	--	--	1.9E-05	8.1E-04	18.9%
				Total ILCR:	1.9E-06	100.0%		HI:	2.3E-03	100.0%	Total ILCR:	1.1E-06	100.0%	HI:	4.3E-03	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
CURRENT ADULT AND ADOLESCENT TRESPASSERS
DERMAL CONTACT WITH SITE 17 (PROPER) SURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF DERMAL ABSORBED DOSES (DADs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cs*CF*AF*ABS*SA*EF*ED)/(BW*AT)
ILCR = CDI*CSFo Adj CSF Adj = CSF/AE
HQ = CDI/RfDo Adj RfD Adj = RfD*AE

Parameter	Description	Adult	Older Child (7-15 Yrs Old)	
DAD	Dermally absorbed dose (mg/kg/d)	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	
HQ	Hazard quotient	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	CS	
CF	Conversion factor (kg/mg)	1E-06	1E-06	
AF	Soil to skin adherence factor (mg/cm2-event)	1	1	
ABS	Absorption fraction	CS	CS	
SA	Skin surface area available for contact (cm2)	5300	3925	
EF	Exposure Frequency (d/yr)	26	26	
ED	Exposure Duration (yrs)	30	9	
BW	Body weight (kg)	70	37	
ATc	Averaging time, carcinogens (d)	25550	25550	
ATn	Averaging time, noncarcinogens (d)	10950	3285	
AE	Adjustment for Absorptin Efficiency	CS	CS	

								Adult Trespassers						Adolescent Trespassers					
								Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	ABS	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	AE	Adj. CSFo 1/(mg/kg/d)	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)pyrene	0.20	0.1	7.30E+00	NA	(1)	NA	NA	4.6E-08	--	0.0%	1.1E-07	--	0.0%	1.9E-08	--	0.0%	1.5E-07	--	0.0%
Aluminum	5105.66	0.01	NA	1.00E+00	0.2	NA	2.00E-01	1.2E-04	--	0.0%	2.8E-04	1.4E-03	3.9%	5.0E-05	--	0.0%	3.9E-04	1.9E-03	3.9%
Arsenic	2.93	0.03	1.50E+00	3.00E-04	0.95	1.58E+00	2.85E-04	2.0E-07	3.2E-07	100.0%	4.7E-07	1.7E-03	4.7%	8.5E-08	1.3E-07	100.0%	6.6E-07	2.3E-03	4.7%
Iron	6380.88	0.01	NA	2.30E-02	0.2	NA	2.30E-02	1.5E-04	--	0.0%	3.4E-04	1.5E-02	42.3%	6.2E-05	--	0.0%	4.8E-04	2.1E-02	42.3%
Manganese	112.81	0.01	NA	7.00E-03	0.05	NA	3.50E-04	2.6E-06	--	0.0%	6.1E-06	1.7E-02	49.1%	1.1E-06	--	0.0%	8.5E-06	2.4E-02	49.1%
								Total ILCR:	3.2E-07	100.0%	HI:	3.5E-02	100.0%	Total ILCR:	1.3E-07	100.0%	HI:	5.0E-02	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.
(1) PAHs not evaluated for dermal absorption since observed effects occur at point of contact.

TABLE
CURRENT ADULT AND ADOLESCENT TRESPASSERS
DERMAL CONTACT WITH SITE 17 (SOIL AOC) SURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF DERMAL ABSORBED DOSES (DADs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cs*CF*AF*ABS*SA*EF*ED)/(BW*AT)
ILCR = CDI*CSFo Adj CSF Adj = CSF/AE
HQ = CDI/RfDo Adj RfD Adj = RfD*AE

Parameter	Description	Adult	Older Child (7-15 Yrs Old)	
DAD	Dermally absorbed dose (mg/kg/d)	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	
HQ	Hazard quotient	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	CS	
CF	Conversion factor (kg/mg)	1E-06	1E-06	
AF	Soil to skin adherence factor (mg/cm2-event)	1	1	
ABS	Absorption fraction	CS	CS	
SA	Skin surface area available for contact (cm2)	5300	3925	
EF	Exposure Frequency (d/yr)	26	26	
ED	Exposure Duration (yrs)	30	9	
BW	Body weight (kg)	70	37	
ATc	Averaging time, carcinogens (d)	25550	25550	
ATn	Averaging time, noncarcinogens (d)	10950	3285	
AE	Adjustment for Absorptin Efficiency	CS	CS	

								Adult Trespassers						Adolescent Trespassers					
								Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	ABS	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	AE	Adj. CSFo 1/(mg/kg/d)	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)anthracene	5.68	0.1	7.30E-01	NA	(1)	NA	NA	1.3E-06	--	0.0%	3.1E-06	--	0.0%	5.5E-07	--	0.0%	4.3E-06	--	0.0%
Benzo(a)pyrene	8.26	0.1	7.30E+00	NA	(1)	NA	NA	1.9E-06	--	0.0%	4.5E-06	--	0.0%	8.0E-07	--	0.0%	6.2E-06	--	0.0%
Benzo(b)fluoranthene	7.51	0.1	7.30E-01	NA	(1)	NA	NA	1.7E-06	--	0.0%	4.1E-06	--	0.0%	7.3E-07	--	0.0%	5.7E-06	--	0.0%
Dibenzo(a,h)anthracene	1.48	0.1	7.30E+00	NA	(1)	NA	NA	3.4E-07	--	0.0%	8.0E-07	--	0.0%	1.4E-07	--	0.0%	1.1E-06	--	0.0%
Indeno(1,2,3-cd)pyrene	3.75	0.1	7.30E-01	NA	(1)	NA	NA	8.7E-07	--	0.0%	2.0E-06	--	0.0%	3.6E-07	--	0.0%	2.8E-06	--	0.0%
Arsenic	3.50	0.03	1.50E+00	3.00E-04	0.95	1.58E+00	2.85E-04	2.4E-07	3.8E-07	100.0%	5.7E-07	2.0E-03	16.0%	1.0E-07	1.6E-07	100.0%	7.9E-07	2.8E-03	16.0%
Iron	7380.00	0.01	NA	3.00E-01	0.2	NA	3.00E-01	1.7E-04	--	0.0%	4.0E-04	1.3E-03	10.7%	7.2E-05	--	0.0%	5.6E-04	1.9E-03	10.7%
Manganese	194.00	0.01	NA	2.30E-02	0.05	NA	1.15E-03	4.5E-06	--	0.0%	1.0E-05	9.1E-03	73.3%	1.9E-06	--	0.0%	1.5E-05	1.3E-02	73.3%
								Total ILCR:	3.8E-07	100.0%	HI:	1.2E-02	100.0%	Total ILCR	1.6E-07	100.0%	HI:	1.7E-02	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.
(1) PAHs not evaluated for dermal absorption since observed effects occur at point of contact.

FUTURE CONSTRUCTION WORKER
ACCIDENTAL INGESTION OF SITE 11 SHALLOW SUBSURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cs*IR*CF*FI*EF*ED)/(BW*AT)

ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	Adult Construction Worker	
CDI	Chronic daily intake (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
IR	Ingestion Rate (mg/d)	480	
CF	Conversion factor (kg/mg)	1E-06	
FI	Fraction of soil ingested from site	1	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	1	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	365	

				Adult Construction Workers					
				Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Arsenic	0.86	1.50E+00	3.00E-04	5.8E-08	8.7E-08	100.0%	4.0E-06	1.3E-02	100.0%
				Total ILCR:	8.7E-08	100.0%	HI:	1.3E-02	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE CONSTRUCTION WORKER
DERMAL CONTACT WITH SITE 11 SHALLOW SUBSURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF DERMAL ABSORBED DOSES (DADs)
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cs*CF*AF*ABS*A*EF*ED)/(BW*AT)

ILCR = CDI*CSFo adj CSF adj = CSF/AE
HQ = CDI/RfDo adj RfD adj = RfD*AE

Parameter	Description	Adult Construction Worker	
DAD	Dermally absorbed dose (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
CF	Conversion factor (kg/mg)	1E-06	
AF	Soil to skin adherence factor (mg/cm2-event)	1	
ABS	Absorption fraction	CS	
SA	Skin surface area available for contact (cm2)	5300	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	1	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	365	
AE	Adjustment for Asorption Efficiency	CS	

								Adult Construction Workers					
								Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	ABS	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	AE	Adj CSFo 1/(mg/kg/d)	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI
Arsenic	0.86	0.03	1.50E+00	3.00E-04	0.95	1.58E+00	2.85E-04	1.9E-08	3.0E-08	100.0%	1.3E-06	4.7E-03	100.0%
								Total ILCR:	3.0E-08	100.0%	HI:	4.7E-03	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE CONSTRUCTION WORKER
INHALATION OF FUGITIVE DUSTS EMANATING FROM SHALLOW SUBSURFACE SOILS AT SITE 11 DURING CONSTRUCTION ACTIVITIES
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Ca*RR*ET*EF*ED)/(BW*AT)
Where: Ca = Cs * (1/PEF)

ILCR = CDI*CSFi
HQ = CDI/RfDi

Parameter	Description	Adult Construction Worker	
CDI	Chronic daily intake (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFi	Inhalation cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDi	Inhalation reference dose (mg/kg/d)	CS	
Ca	Concentration of chemical in air as fugitive dusts (mg/m3)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
PEF	Particulate emission factor (m3/kg)	1.32E+09	
RR	Respiration rate (m3/hr)	1.25	
ET	Exposure time (hrs/d)	8	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	1	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	365	

					Adult Construction Workers					
					Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	Ca (mg/m3)	CSFi 1/(mg/kg/d)	RfDi (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Arsenic	0.86	6.52E-10	1.51E+01	NA	9.1E-13	1.4E-11	100.0%	6.4E-11	--	--
					Total ILCR:	1.4E-11	100.0%	HI:	0.0E+00	0.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE CONSTRUCTION WORKER
ACCIDENTAL INGESTION OF SITE 11 SUBSURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cs*IR*CF*FI*EF*ED)/(BW*AT)

ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	Adult Construction Worker	
CDI	Chronic daily intake (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
IR	Ingestion Rate (mg/d)	480	
CF	Conversion factor (kg/mg)	1E-06	
FI	Fraction of soil ingested from site	1	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	1	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	365	

				Adult Construction Workers					
				Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Arsenic	3.52	1.50E+00	3.00E-04	2.4E-07	3.5E-07	100.0%	1.7E-05	5.5E-02	41.9%
Iron	4874.83	NA	3.00E-01	3.3E-04	--	0.0%	2.3E-02	7.6E-02	58.1%
				Total ILCR:	3.5E-07	100.0%	HI:	1.3E-01	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE CONSTRUCTION WORKER
DERMAL CONTACT WITH SITE 11 SUBSURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF DERMAL ABSORBED DOSES (DADs)
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cs*CF*AF*ABS*A*EF*ED)/(BW*AT)

ILCR = CDI*CSFo adj CSF adj = CSF/AE
HQ = CDI/RfDo adj RfD adj = RfD*AE

Parameter	Description	Adult Construction Worker	
DAD	Dermally absorbed dose (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
CF	Conversion factor (kg/mg)	1E-06	
AF	Soil to skin adherence factor (mg/cm2-event)	1	
ABS	Absorption fraction	CS	
SA	Skin surface area available for contact (cm2)	5300	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	1	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	365	
AE	Adjustment for Asorption Efficiency	CS	

								Adult Construction Workers					
								Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	ABS	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	AE	Adj CSFo 1/(mg/kg/d)	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI
Arsenic	3.52	0.03	1.50E+00	3.00E-04	0.95	1.58E+00	2.85E-04	7.8E-08	1.2E-07	100.0%	5.5E-06	1.9E-02	31.3%
Iron	4874.83	0.01	NA	3.00E-01	0.20	NA	6.00E-02	3.6E-05	--	0.0%	2.5E-03	4.2E-02	68.7%
								Total ILCR:	1.2E-07	100.0%	HI:	6.1E-02	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE CONSTRUCTION WORKER
INHALATION OF FUGITIVE DUSTS EMANATING FROM SUBSURFACE SOILS AT SITE 11 DURING CONSTRUCTION ACTIVITIES
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Ca*RR*ET*EF*ED)/(BW*AT)
Where: Ca = Cs * (1/PEF)

ILCR = CDI*CSFi
HQ = CDI/RfDi

Parameter	Description	Adult Construction Worker	
CDI	Chronic daily intake (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFi	Inhalation cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDi	Inhalation reference dose (mg/kg/d)	CS	
Ca	Concentration of chemical in air as fugitive dusts (mg/m3)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
PEF	Particulate emission factor (m3/kg)	1.32E+09	
RR	Respiration rate (m3/hr)	1.25	
ET	Exposure time (hrs/d)	8	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	1	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	365	

					Adult Construction Worker					
					Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	Ca (mg/m3)	CSFi 1/(mg/kg/d)	RfDi (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Arsenic	3.52	2.67E-09	1.51E+01	NA	3.7E-12	5.6E-11	100.0%	2.6E-10	--	--
Iron	4874.83	3.69E-06	NA	NA	5.2E-09	--	0.0%	3.6E-07	--	--
					Total ILCR:	5.6E-11	100.0%	HI:	0.0E+00	0.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

FUTURE ADULT CONSTRUCTION WORKERS
DERMAL CONTACT WITH SHALLOW GROUNDWATER AT SITE 11
ORGANIC AND FILTERED INORGANIC COPCs
RME EXPOSURE SCENARIO
SUMMARY OF DERMAL ABSORBED DOSES (DADs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cw*CF*Kp*SA*EF*ED*ET)/(BW*AT)

ILCR = CDI*CSFo Adj CSF Adj = CSF/AE
HQ = CDI/RfDo Adj RfD Adj = RfD*AE

Parameter	Description	Adult Construction Worker	
DAD	Dermally absorbed dose (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	
SA	Skin surface area available for contact (cm2)	5300	
ET	Exposure frequency (d/yr)	250	
ED	Exposure duration (yrs)	1	
ET	Exposure time (hrs/day)	8	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	365	
Cw	Concentration of chemical in water (mg/L)	CS	
CF	Conversion factor (L/cm3)	0.001	
Kp	Dermal permeability coefficient (cm/hour)	CS	
AE	Adjustment for Absorption Efficiency	CS	

								Adult Construction Workers					
								Carcinogens			Noncarcinogens		
Parameter	Cw (mg/L)	Kp (cm/hour)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	AE (unitless)	Adj CSFo 1/(mg/kg/d)	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI
Chloromethane	0.003	4.20E-03	1.30E-02	NA	0.80	1.63E-02	NA	7.5E-08	1.2E-09	100.0%	5.2E-06	--	0.0%
amino-Dinitrotoluenes	1.4E-06	2.40E-03	NA	NA	0.60	NA	NA	2.0E-11	--	0.0%	1.4E-09	--	0.0%
RDX	0.0062	8.40E-04	1.10E-01	3.00E-03	0.60	NA	5.00E-03	3.1E-08	--	0.0%	2.2E-06	1.1E-08	100.0%
								Total ILCR:	1.2E-09	100.0%	HI:	1.1E-08	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

FUTURE CONSTRUCTION WORKER
ACCIDENTAL INGESTION OF SITE 17 (PROPER) SHALLOW SUBSURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cs*IR*CF*FI*EF*ED)/(BW*AT)

ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	Adult Construction Worker	
CDI	Chronic daily intake (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
IR	Ingestion Rate (mg/d)	480	
CF	Conversion factor (kg/mg)	1E-06	
FI	Fraction of soil ingested from site	1	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	1	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	365	

				Adult Construction Workers					
				Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Arsenic	2.53	1.50E+00	3.00E-04	1.7E-07	2.5E-07	100.0%	1.2E-05	4.0E-02	37.2%
Iron	4267.65	NA	3.00E-01	2.9E-04	--	0.0%	2.0E-02	6.7E-02	62.8%
				Total ILCR:	2.5E-07	100.0%	HI:	1.1E-01	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE CONSTRUCTION WORKER
ACCIDENTAL INGESTION OF SITE 17 (SOIL AOC) SHALLOW SUBSURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cs*IR*CF*FI*EF*ED)/(BW*AT)

ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	Adult Construction Worker	
CDI	Chronic daily intake (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
IR	Ingestion Rate (mg/d)	480	
CF	Conversion factor (kg/mg)	1E-06	
FI	Fraction of soil ingested from site	1	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	1	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	365	

				Adult Construction Workers					
				Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)anthracene	2.5	7.30E-01	NA	1.7E-07	1.2E-07	3.5%	1.2E-05	--	0.0%
Benzo(a)pyrene	5	7.30E+00	NA	3.4E-07	2.4E-06	70.6%	2.3E-05	--	0.0%
Benzo(b)fluoranthene	3	7.30E-01	NA	2.0E-07	1.5E-07	4.2%	1.4E-05	--	0.0%
Dibenzo(a,h)anthracene	0.97	7.30E+00	NA	6.5E-08	4.8E-07	13.7%	4.6E-06	--	0.0%
Indeno(1,2,3-cd)pyrene	2.7	7.30E-01	NA	1.8E-07	1.3E-07	3.8%	1.3E-05	--	0.0%
Arsenic	1.4	1.50E+00	3.00E-04	9.4E-08	1.4E-07	4.1%	6.6E-06	2.2E-02	35.4%
Iron	2560	NA	3.00E-01	1.7E-04	--	0.0%	1.2E-02	4.0E-02	64.6%
				Total ILCR:	3.5E-06	100.0%	HI:	6.2E-02	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE CONSTRUCTION WORKER
ACCIDENTAL INGESTION OF SITE 17 SUBSURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cs*IR*CF*FI*EF*ED)/(BW*AT)

ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	Adult Construction Worker	
CDI	Chronic daily intake (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
IR	Ingestion Rate (mg/d)	480	
CF	Conversion factor (kg/mg)	1E-06	
FI	Fraction of soil ingested from site	1	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	1	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	365	

				Adult Construction Workers					
				Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)pyrene	0.21108	7.30E+00	NA	1.4E-08	1.0E-07	26.6%	9.9E-07	--	0.0%
Arsenic	2.84	1.50E+00	3.00E-04	1.9E-07	2.9E-07	73.4%	1.3E-05	4.4E-02	33.6%
Iron	5610.06	NA	3.00E-01	3.8E-04	--	0.0%	2.6E-02	8.8E-02	66.4%
				Total ILCR:	3.9E-07	100.0%	HI:	1.3E-01	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE CONSTRUCTION WORKER
DERMAL CONTACT WITH SITE 17 (PROPER) SHALLOW SUBSURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF DERMAL ABSORBED DOSES (DADs)
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cs*CF*AF*ABS*A*EF*ED)/(BW*AT)

ILCR = CDI*CSFo adj CSF adj = CSF/AE
HQ = CDI/RfDo adj RfD adj = RfD*AE

Parameter	Description	Adult Construction Worker	
DAD	Dermally absorbed dose (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
CF	Conversion factor (kg/mg)	1E-06	
AF	Soil to skin adherence factor (mg/cm2-event)	1	
ABS	Absorption fraction	CS	
SA	Skin surface area available for contact (cm2)	5300	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	1	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	365	
AE	Adjustment for Absorption Efficiency	CS	

								Adult Construction Workers					
								Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	ABS	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	AE	Adj CSFo 1/(mg/kg/d)	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI
Arsenic	2.53	0.03	1.50E+00	3.00E-04	0.95	1.58E+00	2.85E-04	5.6E-08	8.9E-08	100.0%	3.9E-06	1.4E-02	27.2%
Iron	4267.65	0.01	NA	3.00E-01	0.20	NA	6.00E-02	3.2E-05	--	0.0%	2.2E-03	3.7E-02	72.8%
								Total ILCR:	8.9E-08	100.0%	HI:	5.1E-02	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE CONSTRUCTION WORKER
DERMAL CONTACT WITH SITE 17 (SOIL AOC) SHALLOW SUBSURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF DERMAL ABSORBED DOSES (DADs)
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cs*CF*AF*ABS*A*EF*ED)/(BW*AT)

ILCR = CDI*CSFo adj CSF adj = CSF/AE
HQ = CDI/RfDo adj RfD adj = RfD*AE

Parameter	Description	Adult Construction Worker	
DAD	Dermally absorbed dose (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
CF	Conversion factor (kg/mg)	1E-06	
AF	Soil to skin adherence factor (mg/cm2-event)	1	
ABS	Absorption fraction	CS	
SA	Skin surface area available for contact (cm2)	5300	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	1	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	365	
AE	Adjustment for Absorption Efficiency	CS	

								Adult Construction Workers					
								Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	ABS	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	AE	Adj CSFo 1/(mg/kg/d)	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)anthracene	2.5	0.1	7.30E-01	NA	(1)	NA	NA	1.9E-07	--	0.0%	1.3E-05	--	0.0%
Benzo(a)pyrene	5	0.1	7.30E+00	NA	(1)	NA	NA	3.7E-07	--	0.0%	2.6E-05	--	0.0%
Benzo(b)fluoranthene	3	0.1	7.30E-01	NA	(1)	NA	NA	2.2E-07	--	0.0%	1.6E-05	--	0.0%
Dibenzo(a,h)anthracene	0.97	0.1	7.30E+00	NA	(1)	NA	NA	7.2E-08	--	0.0%	5.0E-06	--	0.0%
Indeno(1,2,3-cd)pyrene	2.7	0.1	7.30E-01	NA	(1)	NA	NA	2.0E-07	--	0.0%	1.4E-05	--	0.0%
Arsenic	1.4	0.03	1.50E+00	3.00E-04	0.95	1.58E+00	2.85E-04	3.1E-08	4.9E-08	100.0%	2.2E-06	7.6E-03	25.7%
Iron	2560	0.01	NA	3.00E-01	0.20	NA	6.00E-02	1.9E-05	--	0.0%	1.3E-03	2.2E-02	74.3%
								Total ILCR:	4.9E-08	100.0%	HI:	3.0E-02	100.0%

TABLE
FUTURE CONSTRUCTION WORKER
DERMAL CONTACT WITH SITE 17 SUBSURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF DERMAL ABSORBED DOSES (DADs)
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cs*CF*AF*ABS*A*EF*ED)/(BW*AT)

ILCR = CDI*CSFo adj CSF adj = CSF/AE
HQ = CDI/RfDo adj RfD adj = RfD*AE

Parameter	Description	Adult Construction Worker	
DAD	Dermally absorbed dose (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
CF	Conversion factor (kg/mg)	1E-06	
AF	Soil to skin adherence factor (mg/cm2-event)	1	
ABS	Absorption fraction	CS	
SA	Skin surface area available for contact (cm2)	5300	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	1	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	365	
AE	Adjustment for Absorption Efficiency	CS	

								Adult Construction Workers					
								Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	ABS	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	AE	Adj CSFo 1/(mg/kg/d)	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)pyrene	0.21108	0.1	7.30E+00	NA	(1)	NA	NA	1.6E-08	--	0.0%	1.1E-06	--	0.0%
Arsenic	2.84	0.03	1.50E+00	3.00E-04	0.95	1.58E+00	2.85E-04	6.3E-08	1.0E-07	100.0%	4.4E-06	1.6E-02	24.2%
Iron	5610.06	0.01	NA	3.00E-01	0.20	NA	6.00E-02	4.2E-05	--	0.0%	2.9E-03	4.8E-02	75.8%
								Total ILCR:	1.0E-07	100.0%	HI:	6.4E-02	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.
(1) PAHs not evaluated for dermal absorption since observed effects occur at point of contact.

TABLE
FUTURE CONSTRUCTION WORKER
INHALATION OF FUGITIVE DUSTS EMANATING FROM SHALLOW SUBSURFACE SOILS AT SITE 17 (PROPER) DURING CONSTRUCTION ACTIVITIES
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Ca*RR*ET*EF*ED)/(BW*AT)
Where: Ca = Cs * (1/PEF)

ILCR = CDI*CSFi
HQ = CDI/RfDi

Parameter	Description	Adult Construction Worker	
CDI	Chronic daily intake (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFi	Inhalation cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDi	Inhalation reference dose (mg/kg/d)	CS	
Ca	Concentration of chemical in air as fugitive dusts (mg/m3)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
PEF	Particulate emission factor (m3/kg)	1.32E+09	
RR	Respiration rate (m3/hr)	1.25	
ET	Exposure time (hrs/d)	8	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	1	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	365	

					Adult Construction Workers					
					Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	Ca (mg/m3)	CSFi 1/(mg/kg/d)	RfDi (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Arsenic	2.53	1.92E-09	1.51E+01	NA	2.7E-12	4.0E-11	100.0%	1.9E-10	--	--
Iron	4267.65	3.23E-06	NA	NA	4.5E-09	--	0.0%	3.2E-07	--	--
					Total ILCR:	4.0E-11	100.0%	HI:	0.0E+00	0.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE CONSTRUCTION WORKER
INHALATION OF FUGITIVE DUSTS EMANATING FROM SHALLOW SUBSURFACE SOILS AT SITE 17 (SOIL AOC) DURING CONSTRUCTION ACTIVITIES
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Ca*RR*ET*EF*ED)/(BW*AT)
Where: Ca = Cs * (1/PEF)

ILCR = CDI*CSFi
HQ = CDI/RfDi

Parameter	Description	Adult Construction Worker	
CDI	Chronic daily intake (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFi	Inhalation cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDi	Inhalation reference dose (mg/kg/d)	CS	
Ca	Concentration of chemical in air as fugitive dusts (mg/m3)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
PEF	Particulate emission factor (m3/kg)	1.32E+09	
RR	Respiration rate (m3/hr)	1.25	
ET	Exposure time (hrs/d)	8	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	1	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	365	

					Adult Construction Workers					
					Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	Ca (mg/m3)	CSFi 1/(mg/kg/d)	RfDi (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)anthracene	2.5	1.89E-09	3.10E-01	NA	2.6E-12	8.2E-13	1.8%	1.9E-10	--	--
Benzo(a)pyrene	5	3.79E-09	3.10E+00	NA	5.3E-12	1.6E-11	36.7%	3.7E-10	--	--
Benzo(b)fluoranthene	3	2.27E-09	3.10E-01	NA	3.2E-12	9.8E-13	2.2%	2.2E-10	--	--
Dibenzo(a,h)anthracene	0.97	7.35E-10	3.10E+00	NA	1.0E-12	3.2E-12	7.1%	7.2E-11	--	--
Indeno(1,2,3-cd)pyrene	2.7	2.05E-09	3.10E-01	NA	2.9E-12	8.9E-13	2.0%	2.0E-10	--	--
Arsenic	1.4	1.06E-09	1.51E+01	NA	1.5E-12	2.2E-11	50.1%	1.0E-10	--	--
Iron	2560	1.94E-06	NA	NA	2.7E-09	--	0.0%	1.9E-07	--	--
					Total ILCR	4.5E-11	100.0%	HI:	0.0E+00	0.0%

NOTES:

TABLE
FUTURE CONSTRUCTION WORKER
INHALATION OF FUGITIVE DUSTS EMANATING FROM SUBSURFACE SOILS AT SITE 17 DURING CONSTRUCTION ACTIVITIES
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Ca*RR*ET*EF*ED)/(BW*AT)
Where: Ca = Cs * (1/PEF)

ILCR = CDI*CSFi
HQ = CDI/RfDi

Parameter	Description	Adult Construction Worker	
CDI	Chronic daily intake (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFi	Inhalation cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDi	Inhalation reference dose (mg/kg/d)	CS	
Ca	Concentration of chemical in air as fugitive dusts (mg/m3)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
PEF	Particulate emission factor (m3/kg)	1.32E+09	
RR	Respiration rate (m3/hr)	1.25	
ET	Exposure time (hrs/d)	8	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	1	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	365	

					Adult Construction Worker					
					Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	Ca (mg/m3)	CSFi 1/(mg/kg/d)	RfDi (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)pyrene	0.21108	1.60E-10	3.10E+00	NA	2.2E-13	6.9E-13	1.5%	1.6E-11	--	--
Arsenic	2.84	2.15E-09	1.51E+01	NA	3.0E-12	4.5E-11	98.5%	2.1E-10	--	--
Iron	5610.06	4.25E-06	NA	NA	5.9E-09	--	0.0%	4.2E-07	--	--
					Total ILCR:	4.6E-11	100.0%	HI:	0.0E+00	0.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE ADULT CONSTRUCTION WORKERS
DERMAL CONTACT WITH SHALLOW GROUNDWATER AT SITE 17
ORGANIC AND FILTERED INORGANIC COPCs
RME EXPOSURE SCENARIO
SUMMARY OF DERMAL ABSORBED DOSES (DADs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cw*CF*Kp*SA*EF*ED*ET)/(BW*AT)

ILCR = CDI*CSFo Adj CSF Adj = CSF/AE
HQ = CDI/RfDo Adj RfD Adj = RfD*AE

Parameter	Description	Adult Construction Worker	
DAD	Dermally absorbed dose (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	
SA	Skin surface area available for contact (cm2)	5300	
ET	Exposure frequency (d/yr)	250	
ED	Exposure duration (yrs)	1	
ET	Exposure time (hrs/day)	8	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	365	
Cw	Concentration of chemical in water (mg/L)	CS	
CF	Conversion factor (L/cm3)	0.001	
Kp	Dermal permeability coefficient (cm/hour)	CS	
AE	Adjustment for Absorption Efficiency	CS	

								Adult Construction Workers					
								Carcinogens			Noncarcinogens		
Parameter	Cw (mg/L)	Kp (cm/hour)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	AE (unitless)	Adj CSFo 1/(mg/kg/d)	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI
amino-Dinitrotoluenes	0.0013	2.40E-03	NA	NA	0.60	NA	NA	1.8E-08	--	0.0%	1.3E-06	--	0.0%
Total Arsenic	0.01016	1.00E-03	1.50E+00	3.00E-04	0.95	1.58E+00	2.85E-04	6.0E-08	9.5E-08	100.0%	4.2E-06	1.5E-02	22.7%
Total Iron	2.43369	1.00E-03	NA	3.00E-01	0.20	NA	6.00E-02	1.4E-05	--	0.0%	1.0E-03	1.7E-02	25.8%
Total Manganese	0.0932	1.00E-03	NA	2.30E-02	0.05	NA	1.15E-03	5.5E-07	--	0.0%	3.9E-05	3.4E-02	51.5%
								Total ILCR:	9.5E-08	100.0%	HI:	6.5E-02	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

ON-SITE INDUSTRIAL/COMMERCIAL WORKERS - FUTURE SCENARIO
ACCIDENTAL INGESTION OF SURFACE SOIL - SITE 11
REASONABLE MAXIMUM EXPOSURE
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN - YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cs*IR*CF*FI*EF*ED)/(BW*AT)
ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	On-site Worker	
CDI	Chronic daily intake (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
IR	Ingestion Rate (mg/d)	50	
CF	Conversion factor (kg/mg)	0.000001	
FI	Fraction of soil ingested from site	0.5	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	25	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	9125	

				Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Aluminum	6504.27	NA	1.00E+00	5.68E-04	--	--	0.001591	0.001591	9.7%
Arsenic	5.65	1.50E+00	3.00E-04	4.94E-07	7.4E-07	100.0%	1.38E-06	0.004607	28.0%
Chromium	16.92	NA	5.00E-03	1.48E-06	--	--	4.14E-06	0.000828	5.0%
Iron	9909.69	NA	3.00E-01	8.66E-04	--	--	0.002424	0.00808	49.2%
Manganese	125.17	NA	2.30E-02	1.09E-05	--	--	3.06E-05	0.001331	8.1%
				Total ILCR:	7.4E-07	100.0%	Total HI:	1.6E-02	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

ON-SITE INDUSTRIAL/COMMERCIAL WORKERS - FUTURE SCENARIO
DERMAL CONTACT WITH SURFACE SOIL - SITE 11
REASONABLE MAXIMUM EXPOSURE
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN - YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cs*CF*AF*ABS*SA*EF*ED)/(BW*AT)
ILCR = CDI*CSFd
HQ = CDI/RfDd

Parameter	Description	On-site Worker	
DAD	Dermally absorbed dose (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
CF	Conversion factor (kg/mg)	0.000001	
AF	Soil to skin adherence factor (mg/cm2-event)	0.032	
ABS	Absorption fraction	CS	
SA	Skin surface area available for contact (cm2)	4100	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	25	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	9125	

					Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	ABS	CSFd 1/(mg/kg/d)	RfDd (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILC	DAD (mg/kg/d)	HQ	% Contrib. HI
Aluminum	6504.27	0.01	NA	2.00E-01	2.982E-05	--	--	8.35E-05	0.000417	9.9%
Arsenic	5.65	0.0032	1.58E+00	2.85E-04	8.289E-09	1.31E-08	100.0%	2.32E-08	8.14E-05	1.9%
Chromium	16.92	0.01	NA	1.00E-03	7.758E-08	--	--	2.17E-07	0.000217	5.1%
Iron	9909.69	0.01	NA	6.00E-02	4.543E-05	--	--	0.000127	0.00212	50.1%
Manganese	125.17	0.01	NA	1.15E-03	5.739E-07	--	--	1.61E-06	0.001397	33.0%
					Total ILCR:	1.31E-08	100.0%	HI:	0.004234	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

ON-SITE INDUSTRIAL/COMMERCIAL WORKERS - FUTURE SCENARIO
INHALATION OF FUGITIVE DUSTS EMANATING FROM SURFACE SOIL - SITE 11
REASONABLE MAXIMUM EXPOSURE
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN - YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Ca*RR*ET*EF*ED)/(BW*AT)
Where: Ca = Cs * (1/PEF)

ILCR = CDI*CSFi
HQ = CDI/RfDi

Parameter	Description	On-site Worker	
CDI	Chronic daily intake (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFi	Inhalation cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDi	Inhalation reference dose (mg/kg/d)	CS	
Ca	Concentration of chemical in air as fugitive dusts (mg/m3)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
PEF	Particulate emission factor (m3/kg)	1.32E+09	
RR	Respiration rate (m3/hr)	1.25	
ET	Exposure time (hrs/d)	8	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	25	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	9125	

					Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	Ca (mg/m3)	CSFi 1/(mg/kg/d)	RfDi (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Aluminum	6504.27	4.93E-06	NA	1.00E-03	1.7219E-07	--	--	4.82E-07	0.000482	42.6%
Arsenic	5.65	4.28E-09	15.1	NA	1.4958E-10	2.26E-09	11.0%	4.19E-10	--	--
Chromium	16.92	1.28E-08	4.10E+01	NA	4.4794E-10	1.84E-08	89.0%	1.25E-09	--	--
Iron	9909.69	7.51E-06	NA	NA	2.6235E-07	--	--	7.35E-07	--	--
Manganese	125.17	9.48E-08	NA	1.43E-05	3.3137E-09	--	--	9.28E-09	0.000649	57.4%
					Total ILCR:	2.06E-08	100.0%	HI:	0.001131	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

ON-SITE INDUSTRIAL/COMMERCIAL WORKERS - FUTURE SCENARIO
ACCIDENTAL INGESTION OF SURFACE SOIL - SITE 17 PROPER
REASONABLE MAXIMUM EXPOSURE
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN - YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cs*IR*CF*FI*EF*ED)/(BW*AT)
ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	On-site Worker	
CDI	Chronic daily intake (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
IR	Ingestion Rate (mg/d)	50	
CF	Conversion factor (kg/mg)	0.000001	
FI	Fraction of soil ingested from site	0.5	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	25	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	9125	

				Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)pyrene	0.2	7.3	NA	1.75E-08	1.3E-07	24.9%	4.89E-08	--	--
Aluminum	5105.66	NA	1.00E+00	4.46E-04	--	--	1.25E-03	1.25E-03	12.4%
Arsenic	2.93	1.5	3.00E-04	2.56E-07	3.8E-07	75.1%	7.17E-07	2.39E-03	23.8%
Iron	6380.88	NA	3.00E-01	5.57E-04	--	--	1.56E-03	5.20E-03	51.8%
Manganese	112.81	NA	2.30E-02	9.86E-06	--	--	2.76E-05	1.20E-03	11.9%
				Total ILCR:	5.1E-07	100.0%	Total HI:	1.0E-02	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

ON-SITE INDUSTRIAL/COMMERCIAL WORKERS - FUTURE SCENARIO
ACCIDENTAL INGESTION OF SURFACE SOIL - SITE 17 SOIL AOC
REASONABLE MAXIMUM EXPOSURE
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN - YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cs*IR*CF*FI*EF*ED)/(BW*AT)
ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	On-site Worker	
CDI	Chronic daily intake (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
IR	Ingestion Rate (mg/d)	50	
CF	Conversion factor (kg/mg)	0.000001	
FI	Fraction of soil ingested from site	0.5	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	25	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	9125	

				Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)anthracene	5.68	0.73	NA	4.962E-07	3.6E-07	21.4%	1.389E-06	--	--
Benzo(b)fluoranthene	7.51	0.73	NA	6.561E-07	4.8E-07	28.3%	1.837E-06	--	--
Benzo(a)pyrene	0.2	7.3	NA	1.75E-08	1.3E-07	7.5%	4.89E-08	--	--
Indeno(1,2,3-cd)pyrene	3.75	0.73	NA	3.276E-07	2.4E-07	14.1%	9.173E-07	--	--
Dibenzo(a,h)anthracene	1.48	7.3	NA	1.293E-07	9.4E-07	55.7%	3.62E-07	--	--
Arsenic	2.93	1.5	3.00E-04	2.56E-07	3.8E-07	22.7%	7.17E-07	2.39E-03	27.2%
Iron	6380.88	NA	3.00E-01	5.57E-04	--	--	1.56E-03	5.20E-03	59.2%
Manganese	112.81	NA	2.30E-02	9.86E-06	--	--	2.76E-05	1.20E-03	13.6%
				Total ILCR:	1.7E-06	100.0%	Total HI:	8.8E-03	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

ON-SITE INDUSTRIAL/COMMERCIAL WORKERS - FUTURE SCENARIO
DERMAL CONTACT WITH SURFACE SOIL - SITE 17 PROPER
REASONABLE MAXIMUM EXPOSURE
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN - YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cs*CF*AF*ABS*SA*EF*ED)/(BW*AT)
ILCR = CDI*CSFd
HQ = CDI/RfDd

Parameter	Description	On-site Worker	
DAD	Dermally absorbed dose (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
CF	Conversion factor (kg/mg)	0.000001	
AF	Soil to skin adherence factor (mg/cm2-event)	0.032	
ABS	Absorption fraction	CS	
SA	Skin surface area available for contact (cm2)	4100	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	25	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	9125	

					Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	ABS	CSFd 1/(mg/kg/d)	RfDd (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILC	DAD (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)pyrene	0.2	0.1	1.46E+01	NA	9.17E-09	1.34E-07	95.2%	2.57E-08	--	--
Aluminum	5105.66	0.01	NA	0.2	2.341E-05	--	--	6.55E-05	3.28E-04	10.9%
Arsenic	2.93	0.0032	1.58E+00	2.85E-04	4.299E-09	6.79E-09	4.8%	1.2E-08	4.22E-05	1.4%
Iron	6380.88	0.01	NA	6.00E-02	2.926E-05	--	--	8.19E-05	1.37E-03	45.6%
Manganese	112.81	0.01	NA	1.15E-03	5.172E-07	--	--	1.45E-06	1.26E-03	42.1%
					Total ILCR:	1.41E-07	100.0%	HI:	2.99E-03	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

ON-SITE INDUSTRIAL/COMMERCIAL WORKERS - FUTURE SCENARIO
DERMAL CONTACT WITH SURFACE SOIL - SITE 17 SOIL AOC
REASONABLE MAXIMUM EXPOSURE
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN - YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cs*CF*AF*ABS*SA*EF*ED)/(BW*AT)
ILCR = CDI*CSFd
HQ = CDI/RfDd

Parameter	Description	On-site Worker	
DAD	Dermally absorbed dose (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
CF	Conversion factor (kg/mg)	0.000001	
AF	Soil to skin adherence factor (mg/cm2-event)	0.032	
ABS	Absorption fraction	CS	
SA	Skin surface area available for contact (cm2)	4100	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	25	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	9125	

					Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	ABS	CSFd 1/(mg/kg/d)	RfDd (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)anthracene	5.68	0.1	1.46E+00	NA	2.60E-07	3.80E-07	16.8%	7.29E-07	--	--
Benzo(b)fluoranthene	7.51	0.1	1.46E+00	NA	3.44E-07	5.03E-07	22.2%	9.64E-07	--	--
Benzo(a)pyrene	0.2	0.1	1.46E+01	NA	9.17E-09	1.34E-07	5.9%	2.57E-08	--	--
Indeno(1,2,3-cd)pyrene	3.75	0.1	1.46E+00	NA	1.72E-07	2.51E-07	11.1%	4.81E-07	--	--
Dibenzo(a,h)anthracene	1.48	0.1	1.46E+01	NA	6.79E-08	9.91E-07	43.7%	1.90E-07	--	--
Arsenic	2.93	0.0032	1.58E+00	2.85E-04	4.30E-09	6.79E-09	0.3%	1.20E-08	4.22E-05	1.6%
Iron	6380.88	0.01	NA	6.00E-02	2.93E-05	--	--	8.19E-05	1.37E-03	51.2%
Manganese	112.81	0.01	NA	1.15E-03	5.17E-07	--	--	1.45E-06	1.26E-03	47.2%
					Total ILCR:	2.27E-06	100.0%	HI:	0.002667	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

ON-SITE INDUSTRIAL/COMMERCIAL WORKERS - FUTURE SCENARIO
INHALATION OF FUGITIVE DUSTS EMANATING FROM SURFACE SOIL - SITE 17 PROPER
REASONABLE MAXIMUM EXPOSURE
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN - YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Ca*RR*ET*EF*ED)/(BW*AT)
Where: Ca = Cs * (1/PEF)

ILCR = CDI*CSFi
HQ = CDI/RfDi

Parameter	Description	On-site Worker	
CDI	Chronic daily intake (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFi	Inhalation cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDi	Inhalation reference dose (mg/kg/d)	CS	
Ca	Concentration of chemical in air as fugitive dusts (mg/m3)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
PEF	Particulate emission factor (m3/kg)	1.32E+09	
RR	Respiration rate (m3/hr)	1.25	
ET	Exposure time (hrs/d)	8	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	25	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	9125	

					Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	Ca (mg/m3)	CSFi 1/(mg/kg/d)	RfDi (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)pyrene	0.2	1.52E-10	3.1	NA	5.29E-12	1.64E-11	1.4%	1.48E-11	--	--
Aluminum	5105.66	3.87E-06	NA	1.00E-03	1.35E-07	--	--	3.78E-07	3.78E-04	39.3%
Arsenic	2.93	2.22E-09	15.1	NA	7.76E-11	1.17E-09	98.6%	2.17E-10	--	--
Iron	6380.88	4.83E-06	NA	NA	1.69E-07	--	--	4.73E-07	--	--
Manganese	112.81	8.55E-08	NA	1.43E-05	2.99E-09	--	--	8.36E-09	5.85E-04	60.7%
					Total ILCR:	1.19E-09	100.0%	HI:	9.63E-04	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

ON-SITE INDUSTRIAL/COMMERCIAL WORKERS - FUTURE SCENARIO
INHALATION OF FUGITIVE DUSTS EMANATING FROM SURFACE SOIL - SITE 17 SOIL AOC
REASONABLE MAXIMUM EXPOSURE
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN - YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Ca*RR*ET*EF*ED)/(BW*AT)
Where: Ca = Cs * (1/PEF)

ILCR = CDI*CSFi
HQ = CDI/RfDi

Parameter	Description	On-site Worker	
CDI	Chronic daily intake (mg/kg/d)	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	
CSFi	Inhalation cancer slope factor (1/(mg/kg/d))	CS	
HQ	Hazard quotient	CS	
RfDi	Inhalation reference dose (mg/kg/d)	CS	
Ca	Concentration of chemical in air as fugitive dusts (mg/m3)	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	
PEF	Particulate emission factor (m3/kg)	1.32E+09	
RR	Respiration rate (m3/hr)	1.25	
ET	Exposure time (hrs/d)	8	
EF	Exposure Frequency (d/yr)	250	
ED	Exposure Duration (yrs)	25	
BW	Body weight (kg)	70	
ATc	Averaging time, carcinogens (d)	25550	
ATn	Averaging time, noncarcinogens (d)	9125	

					Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	Ca (mg/m3)	CSFi 1/(mg/kg/d)	RfDi (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)anthracene	5.68	4.3E-09	0.61	NA	1.504E-10	9.17E-11	5.4%	4.21E-10	--	--
Benzo(b)fluoranthene	7.51	5.69E-09	0.61	NA	1.988E-10	1.21E-10	7.1%	5.57E-10	--	--
Benzo(a)pyrene	0.2	1.52E-10	3.1	NA	5.295E-12	1.64E-11	1.0%	1.48E-11	--	--
Indeno(1,2,3-cd)pyrene	3.75	2.84E-09	0.61	NA	9.928E-11	6.06E-11	3.6%	2.78E-10	--	--
Dibenzo(a,h)anthracene	1.48	1.12E-09	6.1	NA	3.918E-11	2.39E-10	14.1%	1.1E-10	--	--
Arsenic	2.93	2.22E-09	15.1	NA	7.757E-11	1.17E-09	68.9%	2.17E-10	--	--
Iron	6380.88	4.83E-06	NA	NA	1.689E-07	--	--	4.73E-07	--	--
Manganese	112.81	8.55E-08	NA	1.43E-05	2.987E-09	--	--	8.36E-09	0.000585	100.0%
					Total ILCR:	1.7E-09	100.0%	HI:	0.000585	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

FUTURE ON-SITE RESIDENTS
ACCIDENTAL INGESTION OF SITE 11 SURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d (Cs*IR*CF*FI*EF*ED)/(BW*AT)
ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	Adult	Younger Child (1-6 Yrs Ol	Older Child (7-15 Yrs Old)
CDI	Chronic daily intake (mg/kg/d)	CS	CS	CS
ILCR	Incremental lifetime cancer risk	CS	CS	CS
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	CS
HQ	Hazard quotient	CS	CS	CS
RfDo	Oral reference dose (mg/kg/d)	CS	CS	CS
Cs	Concentration of chemical in soil (mg/kg)	CS	CS	CS
IR	Ingestion Rate (mg/d)	100	200	100
CF	Conversion factor (kg/mg)	1E-06	1E-06	1E-06
FI	Fraction of soil ingested from site	1	1	1
EF	Exposure Frequency (d/yr)	350	350	350
ED	Exposure Duration (yrs)	15	6	9
BW	Body weight (kg)	70	15	37
ATc	Averaging time, carcinogens (d)	25550	25550	25550
ATn	Averaging time, noncarcinogens (d)	5475	2190	3285

				Adult Residents						Child Residents						Adolescent Residents					
				Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Aluminum	6504.27	NA	1.00E+00	1.9E-03	--	0.0%	8.9E-03	8.9E-03	9.7%	7.1E-03	0.0E+00	0.0%	8.3E-02	8.3E-02	9.7%	2.2E-03	0.0E+00	0.0%	1.7E-02	1.7E-02	9.7%
Arsenic	5.65	1.50E+00	3.00E-04	1.7E-06	2.5E-06	100.0%	7.7E-06	2.6E-02	28.0%	6.2E-06	9.3E-06	100.0%	7.2E-05	2.4E-01	28.0%	1.9E-06	2.8E-06	100.0%	1.5E-05	4.9E-02	28.0%
Chromium	16.92	NA	5.00E-03	5.0E-06	--	0.0%	2.3E-05	4.6E-03	5.0%	1.9E-05	0.0E+00	0.0%	2.2E-04	4.3E-02	5.0%	5.6E-06	0.0E+00	0.0%	4.4E-05	8.8E-03	5.0%
Iron	9909.69	NA	3.00E-01	2.9E-03	--	0.0%	1.4E-02	4.5E-02	49.2%	1.1E-02	0.0E+00	0.0%	1.3E-01	4.2E-01	49.2%	3.3E-03	0.0E+00	0.0%	2.6E-02	8.6E-02	49.2%
Mangangese	125.17	NA	2.30E-02	3.7E-05	--	0.0%	1.7E-04	7.5E-03	8.1%	1.4E-04	0.0E+00	0.0%	1.6E-03	7.0E-02	8.1%	4.2E-05	0.0E+00	0.0%	3.2E-04	1.4E-02	8.1%
				Total ILCR:	2.5E-06	100.0%	HI:	9.2E-02	100.0%	Total ILCR:	9.3E-06	100.0%	HI:	8.6E-01	100.0%	Total ILCR:	2.8E-06	100.0%	HI:	1.7E-01	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE ON-SITE RESIDENTS
DERMAL CONTACT WITH SITE 11 SURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF DERMAL ABSORBED DOSES (DADs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cs*CF*AF*ABS*SA*EF*ED)/(BW*AT)
ILCR = CDI*CSFo Adj CSF Adj = CSF/AE
HQ = CDI/RfDo Adj RfD Adj = RfD*AE

Parameter	Description	Adult	Younger Child (1-6 Yrs Old)	Older Child (7-15 Yrs Old)
DAD	Dermally absorbed dose (mg/kg/d)	CS	CS	CS
ILCR	Incremental lifetime cancer risk	CS	CS	CS
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	CS
HQ	Hazard quotient	CS	CS	CS
RfDo	Oral reference dose (mg/kg/d)	CS	CS	CS
Cs	Concentration of chemical in soil (mg/kg)	CS	CS	CS
CF	Conversion factor (kg/mg)	1E-06	1E-06	1E-06
AF	Soil to skin adherence factor (mg/cm2-event)	1	1	1
ABS	Absorption fraction	CS	CS	CS
SA	Skin surface area available for contact (cm2)	5300	2006	3925
EF	Exposure Frequency (d/yr)	350	350	350
ED	Exposure Duration (yrs)	15	6	9
BW	Body weight (kg)	70	15	37
ATc	Averaging time, carcinogens (d)	25550	25550	25550
ATn	Averaging time, noncarcinogens (d)	5475	2190	3285
AE	Adjustment for Absorptin Efficiency	CS	CS	CS

								Adult Residents						Child Residents						Adolescent Residents					
								Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	ABS	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	AE	Adj. CSFo 1/(mg/kg/d)	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI
Aluminum	6504.27	0.01	NA	1.00E+00	0.2	NA	2.00E-01	1.0E-03	--	0.0%	4.7E-03	2.4E-02	22.1%	7.1E-04	--	0.0%	8.3E-03	4.2E-02	22.1%	8.5E-04	--	0.0%	6.6E-03	3.3E-02	22.1%
Arsenic	5.85	0.03	1.50E+00	3.00E-04	0.95	1.58E+00	2.85E-04	2.6E-06	4.2E-06	100.0%	1.2E-05	4.3E-02	40.4%	1.9E-06	2.9E-06	100.0%	2.2E-05	7.6E-02	40.4%	2.2E-06	3.5E-06	100.0%	1.7E-05	6.0E-02	40.4%
Chromium	16.92	0.01	NA	5.00E-03	0.2	NA	1.00E-03	2.6E-06	--	0.0%	1.2E-05	1.2E-02	11.5%	1.9E-06	--	0.0%	2.2E-05	2.2E-02	11.5%	2.2E-06	--	0.0%	1.7E-05	1.7E-02	11.5%
Iron	9909.69	0.01	NA	3.00E-01	0.2	NA	3.00E-01	1.5E-03	--	0.0%	7.2E-03	2.4E-02	22.4%	1.1E-03	--	0.0%	1.3E-02	4.2E-02	22.4%	1.3E-03	--	0.0%	1.0E-02	3.4E-02	22.4%
Manganese	125.17	0.01	NA	2.30E-02	0.05	NA	2.30E-02	1.9E-05	--	0.0%	9.1E-05	4.0E-03	3.7%	1.4E-05	--	0.0%	1.6E-04	7.0E-03	3.7%	1.6E-05	--	0.0%	1.3E-04	5.5E-03	3.7%
								Total ILCR:	4.2E-06	100.0%	HI:	1.1E-01	100.0%	Total ILCR:	2.9E-06	100.0%	HI:	1.9E-01	100.0%	Total ILCR:	3.5E-06	100.0%	HI:	1.5E-01	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

FUTURE ON-SITE RESIDENTS
INGESTION OF SHALLOW GROUNDWATER AS DRINKING WATER AT SITE 11 UNDER BENEFICIAL USE SCENARIO
ORGANIC AND FILTERED INORGANIC COPCs
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cw*IR*EF*ED)/(BW*AT)
ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	Adult	Older Child (7-15 Yrs Old)	Young Child (1-6 Yrs Old)	
CDI	Chronic daily intake (mg/kg/d)	CS	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	CS	
HQ	Hazard quotient	CS	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	CS	
Cw	Concentration of chemical in water (mg/L)	CS	CS	CS	
IR	Ingestion Rate (L/d)	0.05	0.05	0.05	
EF	Exposure Frequency (d/yr)	40	40	40	
ED	Exposure Duration (yrs)	15	9	6	
BW	Body weight (kg)	70	37	15	
ATc	Averaging time, carcinogens (d)	25550	25550	25550	
ATn	Averaging time, noncarcinogens (d)	5475	3285	2190	

				Adult Residents						Adolescents Residents						Young Child Residents					
				Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cw (mg/L)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Chloromethane	0.003	1.30E-02	NA	5.0E-08	6.5E-10	100.0%	2.3E-07	--	0.0%	5.7E-08	7.4E-10	100.0%	4.4E-07	--	0.0%	9.4E-08	1.2E-09	100.0%	1.1E-06	--	0.0%
amino-Dinitrotoluenes	0.0014	NA	3.00E-03	2.3E-08	--	0.0%	1.1E-07	3.3E-10	91.9%	2.7E-08	--	0.0%	2.1E-07	6.2E-10	91.9%	4.4E-08	--	0.0%	5.1E-07	1.5E-09	91.9%
RDX	0.0062	NA	6.00E-05	1.0E-07	--	0.0%	4.9E-07	2.9E-11	8.1%	1.2E-07	--	0.0%	9.2E-07	5.5E-11	8.1%	1.9E-07	--	0.0%	2.3E-06	1.4E-10	8.1%
				Total ILCR:	6.5E-10	100.0%		HI:	3.6E-10	100.0%	Total ILCR:	7.4E-10	100.0%		HI:	6.8E-10	100.0%	Total ILCR:	1.2E-09	100.0%		HI:	1.7E-09	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE ON-SITE RESIDENTS
DERMAL CONTACT WITH SHALLOW GROUNDWATER AT SITE 11 UNDER BENEFICIAL USE SCENARIO
ORGANIC AND FILTERED INORGANIC COPCs
RME EXPOSURE SCENARIO
SUMMARY OF DERMAL ABSORBED DOSES (DADs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cw*CF*Kp*SA*EF*ED*ET)/(BW*AT)

ILCR = CDI*CSFo Adj CSF Adj = CSF/AE
HQ = CDI/RfDo Adj RfD Adj = RfD*AE

Parameter	Description	Adult	Older Child (7-15 Yrs Old)	Young Child (1-6 Yrs Old)	
DAD	Dermally absorbed dose (mg/kg/d)	CS	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	CS	
HQ	Hazard quotient	CS	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	CS	
SA	Skin surface area available for contact (cm2)	5300	3925	2006	
EF	Exposure frequency (d/yr)	40	40	40	
ED	Exposure duration (yrs)	15	9	6	
ET	Exposure time (hrs/day)	1	1	1	
BW	Body weight (kg)	70	37	15	
ATc	Averaging time, carcinogens (d)	25550	25550	25550	
ATn	Averaging time, noncarcinogens (d)	5475	3285	2190	
Cw	Concentration of chemical in water (mg/L)	CS	CS	CS	
CF	Conversion factor (L/cm3)	0.001	0.001	0.001	
Kp	Dermal permeability coefficient (cm/hour)	CS	CS	CS	
AE	Adjustment for Absorption Efficiency	CS	CS	CS	

								Adult Residents						Adolescent Residents						Young Child Residents					
								Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cw (mg/L)	Kp (cm/hour)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	AE (unitless)	Adj CSFo 1/(mg/kg/d)	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib Total ILC	DAD (mg/kg/d)	HQ	% Contrib HI
Chloromethane	0.003	4.20E-03	1.30E-02	NA	0.80	1.63E-02	NA	2.2E-08	3.6E-10	100.0%	1.0E-07	--	0.0%	1.9E-08	3.1E-10	100.0%	1.5E-07	--	0.0%	1.6E-08	2.6E-10	100.0%	1.6E-08	--	0.0%
amino-Dinitrotoluenes	1.4E-06	8.40E-04	NA	6.00E-05	0.60	NA	1.00E-04	2.1E-12	--	0.0%	9.8E-12	9.8E-16	0.0%	1.8E-12	--	0.0%	1.4E-11	1.4E-15	0.0%	1.4E-20	--	0.0%	6.6E-20	6.6E-24	0.0%
RDX	0.0062	8.40E-04	1.10E-01	3.00E-03	0.60	NA	5.00E-03	9.3E-09	--	0.0%	4.3E-08	2.2E-10	100.0%	7.8E-09	--	0.0%	6.1E-08	3.0E-10	100.0%	1.4E-11	--	0.0%	6.5E-11	3.2E-13	100.0%
								Total ILCR:	3.6E-10	100.0%	HI:	2.2E-10	100.0%	Total ILCR:	3.1E-10	100.0%	HI:	3.0E-10	100.0%	Total ILC	2.6E-10	100.0%	HI:	3.2E-13	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE ON-SITE RESIDENTS
ACCIDENTAL INGESTION OF SITE 17 (PROPER) SURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cs*IR*CF*FI*EF*ED)/(BW*AT)
ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	Adult	Younger Child (1-6 Yrs Old)	Older Child (7-15 Yrs Old)	
CDI	Chronic daily intake (mg/kg/d)	CS	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	CS	
HQ	Hazard quotient	CS	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	CS	CS	
IR	Ingestion Rate (mg/d)	100	200	100	
CF	Conversion factor (kg/mg)	1E-06	1E-06	1E-06	
FI	Fraction of soil ingested from site	1	1	1	
EF	Exposure Frequency (d/yr)	350	350	350	
ED	Exposure Duration (yrs)	15	6	9	
BW	Body weight (kg)	70	15	37	
ATc	Averaging time, carcinogens (d)	25550	25550	25550	
ATn	Averaging time, noncarcinogens (d)	5475	2190	3285	

				Adult Residents						Child Residents						Adolescents Residents					
				Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)pyrene	0.20	7.30E+00	NA	5.9E-08	4.3E-07	24.9%	2.7E-07	--	0.0%	2.2E-07	1.6E-06	24.9%	2.6E-06	--	0.0%	6.7E-08	4.9E-07	24.9%	5.2E-07	--	0.0%
Aluminum	5105.66	NA	1.00E+00	1.5E-03	0.0E+00	0.0%	7.0E-03	7.0E-03	12.4%	5.6E-03	0.0E+00	0.0%	6.5E-02	6.5E-02	12.4%	1.7E-03	0.0E+00	0.0%	1.3E-02	1.3E-02	12.4%
Arsenic	2.93	1.50E+00	3.00E-04	8.6E-07	1.3E-06	75.1%	4.0E-06	1.3E-02	23.8%	3.2E-06	4.8E-06	75.1%	3.7E-05	1.2E-01	23.8%	9.8E-07	1.5E-06	75.1%	7.6E-06	2.5E-02	23.8%
Iron	6380.88	NA	3.00E-01	1.9E-03	0.0E+00	0.0%	8.7E-03	2.9E-02	51.8%	7.0E-03	0.0E+00	0.0%	8.2E-02	2.7E-01	51.8%	2.1E-03	0.0E+00	0.0%	1.7E-02	5.5E-02	51.8%
Manganese	112.81	NA	2.30E-02	3.3E-05	--	--	1.5E-04	6.7E-03	11.9%	1.2E-04	--	--	1.4E-03	6.3E-02	11.9%	3.0E-05	--	--	2.9E-04	1.3E-02	11.9%
				Total ILCR:	1.7E-06	100.0%		HI:	5.6E-02	100.0%	Total ILCR:	6.4E-06	100.0%		HI:	5.2E-01	100.0%	Total ILCR:	2.0E-06	100.0%		HI:	1.1E-01	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE ON-SITE RESIDENTS
ACCIDENTAL INGESTION OF SITE 17 (PROPER) SURFACE SOILS
CT EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cs*IR*CF*FI*EF*ED)/(BW*AT)
ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	Adult	Younger Child (1-6 Yrs Old)	Older Child (7-15 Yrs Old)	
CDI	Chronic daily intake (mg/kg/d)	CS	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	CS	
HQ	Hazard quotient	CS	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	CS	CS	
IR	Ingestion Rate (mg/d)	50	100	50	
CF	Conversion factor (kg/mg)	1E-06	1E-06	1E-06	
FI	Fraction of soil ingested from site	1	1	1	
EF	Exposure Frequency (d/yr)	234	234	234	
ED	Exposure Duration (yrs)	15	6	9	
BW	Body weight (kg)	70	15	37	
ATc	Averaging time, carcinogens (d)	25550	25550	25550	
ATn	Averaging time, noncarcinogens (d)	5475	2190	3285	

				Adult Residents						Child Residents						Adolescent Residents					
				Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)pyrene	0.19	7.30E+00	NA	1.9E-08	1.4E-07	27.2%	8.8E-08	--	0.0%	7.0E-08	5.1E-07	27.2%	8.2E-07	--	0.0%	2.1E-08	1.6E-07	27.2%	1.7E-07	--	0.0%
Aluminum	4559.00	NA	1.00E+00	4.5E-04	0.0E+00	0.0%	2.1E-03	2.1E-03	13.2%	1.7E-03	0.0E+00	0.0%	1.9E-02	1.9E-02	13.2%	5.1E-04	0.0E+00	0.0%	3.9E-03	3.9E-03	13.2%
Arsenic	2.49	1.50E+00	3.00E-04	2.4E-07	3.7E-07	72.8%	1.1E-06	3.8E-03	24.0%	9.1E-07	1.4E-06	72.8%	1.1E-05	3.5E-02	24.0%	2.8E-07	4.2E-07	72.8%	2.2E-06	7.2E-03	24.0%
Iron	5411.00	NA	3.00E-01	5.3E-04	0.0E+00	0.0%	2.5E-03	8.3E-03	52.2%	2.0E-03	0.0E+00	0.0%	2.3E-02	7.7E-02	52.2%	6.0E-04	0.0E+00	0.0%	4.7E-03	1.6E-02	52.2%
Manganese	84.84	NA	2.30E-02	8.3E-06	--	--	3.9E-05	1.7E-03	10.7%	3.1E-05	--	--	3.6E-04	1.6E-02	10.7%	9.5E-06	--	--	7.4E-05	3.2E-03	10.7%
				Total ILCR:	5.0E-07	100.0%		HI:	1.6E-02	100.0%	Total ILCR:	1.9E-06	100.0%		HI:	1.5E-01	100.0%	Total ILCR:	5.7E-07	100.0%		HI:	3.0E-02	100.0%

NOTES:
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-- Not applicable.

TABLE
FUTURE ON-SITE RESIDENTS
DERMAL CONTACT WITH SITE 17 (PROPER) SURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF DERMAL ABSORBED DOSES (DADs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cs*CF*AF*ABS*SA*EF*ED)/(BW*AT)
ILCR = CDI*CSFo Adj CSF Adj = CSF/AE
HQ = CDI/RfDo Adj RfD Adj = RfD*AE

Parameter	Description	Adult	Younger Child (1-6 Yrs O	Older Child (7-15 Yrs O(d)	
DAD	Dermally absorbed dose (mg/kg/d)	CS	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	CS	
HQ	Hazard quotient	CS	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	CS	CS	
CF	Conversion factor (kg/mg)	1E-06	1E-06	1E-06	
AF	Soil to skin adherence factor (mg/cm2-event)	1	1	1	
ABS	Absorption fraction	CS	CS	CS	
SA	Skin surface area available for contact (cm2	5300	2006	3925	
EF	Exposure Frequency (d/yr)	350	350	350	
ED	Exposure Duration (yrs)	15	6	9	
BW	Body weight (kg)	70	15	37	
ATc	Averaging time, carcinogens (d)	25550	25550	25550	
ATn	Averaging time, noncarcinogens (d)	5475	2190	3285	
AE	Adjustment for Absorptin Efficiency	CS	CS	CS	

								Adult Residents						Child Residents						Adolescent Residents					
								Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	ABS	CSFo 1/(mg/kg/d	RfDo (mg/kg/d)	AE	Adj. CSFo 1/(mg/kg/d	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILC	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILC	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILC	DAD (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)pyrene	0.20	0.1	7.30E+00	NA	(1)	NA	NA	3.1E-07	0.0E+00	0.0%	1.5E-06	--	0.0%	2.2E-07	0.0E+00	0.0%	2.6E-06	--	0.0%	2.6E-07	0.0E+00	0.0%	2.0E-06	--	0.0%
Aluminum	5105.66	0.01	NA	1.00E+00	0.2	NA	2.00E-01	7.9E-04	0.0E+00	0.0%	3.7E-03	1.9E-02	3.9%	5.6E-04	0.0E+00	0.0%	6.6E-03	3.3E-02	3.9%	6.7E-04	0.0E+00	0.0%	5.2E-03	2.6E-02	3.9%
Arsenic	2.93	0.03	1.50E+00	3.00E-04	0.95	1.58E+00	2.85E-04	1.4E-06	2.2E-06	100.0%	6.4E-06	2.2E-02	4.7%	9.7E-07	1.5E-06	100.0%	1.1E-05	4.0E-02	4.7%	1.1E-06	1.8E-06	100.0%	8.9E-06	3.1E-02	4.7%
Iron	6380.88	0.01	NA	2.30E-02	0.2	NA	2.30E-02	9.9E-04	0.0E+00	0.0%	4.6E-03	2.0E-01	42.3%	7.0E-04	0.0E+00	0.0%	8.2E-03	3.6E-01	42.3%	8.3E-04	0.0E+00	0.0%	6.6E-03	2.9E-01	42.3%
Manganese	112.81	0.01	NA	7.00E-03	0.05	NA	3.50E-04	1.8E-05	--	0.0%	8.2E-05	2.3E-01	49.1%	1.2E-05	--	0.0%	1.4E-04	4.1E-01	49.1%	1.5E-05	--	0.0%	1.1E-04	3.3E-01	49.1%
								Total ILC	2.2E-06	100.0%		HI:	4.8E-01	Total ILC	1.5E-06	100.0%		HI:	8.4E-01	Total ILC	1.8E-06	100.0%		HI:	6.7E-01	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.
(1) PAHs not evaluated for dermal absorption since observed effects occur at point of contact.

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CT EXPOSURE SCENARIO
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NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cs*CF*AF*ABS*SA*EF*ED)/(BW*AT)
ILCR = CDI*CSFo Adj CSF Adj = CSF/AE
HQ = CDI/RfDo Adj RfD Adj = RfD*AE

Parameter	Description	Adult	Younger Child (1-6 Yrs Old)	Older Child (7-15 Yrs Old)	
DAD	Dermally absorbed dose (mg/kg/d)	CS	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	CS	
HQ	Hazard quotient	CS	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	CS	CS	
CF	Conversion factor (kg/mg)	1E-06	1E-06	1E-06	
AF	Soil to skin adherence factor (mg/cm2-event)	1	1	1	
ABS	Absorption fraction	CS	CS	CS	
SA	Skin surface area available for contact (cm2)	5000	1745	3188	
EF	Exposure Frequency (d/yr)	234	234	234	
ED	Exposure Duration (yrs)	15	6	9	
BW	Body weight (kg)	70	15	37	
ATc	Averaging time, carcinogens (d)	25550	25550	25550	
ATn	Averaging time, noncarcinogens (d)	5475	2190	3285	
AE	Adjustment for Absorptin Efficiency	CS	CS	CS	

								Adult Residents						Child Residents						Adolescent Residents					
								Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	ABS	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	AE	Adj. CSFo 1/(mg/kg/d)	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)pyrene	0.19	0.1	7.30E+00	NA	(1)	NA	NA	1.9E-07	0.0E+00	0.0%	8.8E-07	--	0.0%	1.2E-07	0.0E+00	0.0%	1.4E-06	--	0.0%	1.4E-07	0.0E+00	0.0%	1.1E-06	--	0.0%
Aluminum	4559.00	0.01	NA	1.00E+00	0.2	NA	2.00E-01	4.5E-04	0.0E+00	0.0%	2.1E-03	1.0E-02	4.3%	2.9E-04	0.0E+00	0.0%	3.4E-03	1.7E-02	4.3%	3.2E-04	0.0E+00	0.0%	2.5E-03	1.3E-02	4.3%
Arsenic	2.49	0.03	1.50E+00	3.00E-04	0.95	1.58E+00	2.85E-04	7.3E-07	1.2E-06	100.0%	3.4E-06	1.2E-02	5.0%	4.8E-07	7.5E-07	100.0%	5.6E-06	2.0E-02	5.0%	5.3E-07	8.4E-07	100.0%	4.1E-06	1.4E-02	5.0%
Iron	5411.00	0.01	NA	2.30E-02	0.2	NA	2.30E-02	5.3E-04	0.0E+00	0.0%	2.5E-03	1.1E-01	44.7%	3.5E-04	0.0E+00	0.0%	4.0E-03	1.8E-01	44.7%	3.8E-04	0.0E+00	0.0%	3.0E-03	1.3E-01	44.7%
Manganese	84.84	0.01	NA	7.00E-03	0.05	NA	3.50E-04	8.3E-06	--	0.0%	3.9E-05	1.1E-01	46.0%	5.4E-06	--	0.0%	6.3E-05	1.8E-01	46.0%	6.0E-06	--	0.0%	4.7E-05	1.3E-01	46.0%
								Total ILCR:	1.2E-06	100.0%	HI:	2.4E-01	100.0%	Total ILCR:	7.5E-07	100.0%	HI:	3.9E-01	100.0%	Total ILCR:	8.4E-07	100.0%	HI:	2.9E-01	100.0%

NOTES:
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-- Not applicable.
(1) PAHs not evaluated for dermal absorption since observed effects occur at point of contact.

TABLE
FUTURE ON-SITE RESIDENTS
ACCIDENTAL INGESTION OF SITE 17 (SOIL AOC) SURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cs*IR*CF*FI*EF*ED)/(BW*AT)
ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	Adult	Younger Child (1-6 Yrs Old)	Older Child (7-15 Yrs Old)	
CDI	Chronic daily intake (mg/kg/d)	CS	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	CS	
HQ	Hazard quotient	CS	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	CS	CS	
IR	Ingestion Rate (mg/d)	100	200	100	
CF	Conversion factor (kg/mg)	1E-06	1E-06	1E-06	
FI	Fraction of soil ingested from site	1	1	1	
EF	Exposure Frequency (d/yr)	350	350	350	
ED	Exposure Duration (yrs)	15	6	9	
BW	Body weight (kg)	70	15	37	
ATc	Averaging time, carcinogens (d)	25550	25550	25550	
ATn	Averaging time, noncarcinogens (d)	5475	2190	3285	

				Adult Residents						Child Residents						Adolescent Residents					
				Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)anthracene	5.68	7.30E-01	NA	1.7E-06	1.2E-06	4.7%	7.8E-06	--	0.0%	6.2E-06	4.5E-06	4.7%	7.3E-05	--	0.0%	1.9E-06	1.4E-06	4.7%	1.5E-05	--	0.0%
Benzo(a)pyrene	8.26	7.30E+00	NA	2.4E-06	1.8E-05	67.9%	1.1E-05	--	0.0%	9.1E-06	6.6E-05	67.9%	1.1E-04	--	0.0%	2.8E-06	2.0E-05	67.9%	2.1E-05	--	0.0%
Benzo(b)fluoranthene	7.51	7.30E-01	NA	2.2E-06	1.6E-06	6.2%	1.0E-05	--	0.0%	8.2E-06	6.0E-06	6.2%	9.6E-05	--	0.0%	2.5E-06	1.8E-06	6.2%	1.9E-05	--	0.0%
Dibenzo(a,h)anthracene	1.48	7.30E+00	NA	4.4E-07	3.2E-06	12.2%	2.0E-06	--	0.0%	1.6E-06	1.2E-05	12.2%	1.9E-05	--	0.0%	4.9E-07	3.6E-06	12.2%	3.8E-06	--	0.0%
Indeno(1,2,3-cd)pyrene	3.75	7.30E-01	NA	1.1E-06	8.0E-07	3.1%	5.1E-06	--	0.0%	4.1E-06	3.0E-06	3.1%	4.8E-05	--	0.0%	1.2E-06	9.1E-07	3.1%	9.7E-06	--	0.0%
Arsenic	3.50	1.50E+00	3.00E-04	1.0E-06	1.5E-06	5.9%	4.8E-06	1.6E-02	26.1%	3.8E-06	5.8E-06	5.9%	4.5E-05	1.5E-01	26.1%	1.2E-06	1.7E-06	5.9%	9.1E-06	3.0E-02	26.1%
Iron	7380.00	NA	3.00E-01	2.2E-03	--	0.0%	1.0E-02	3.4E-02	55.0%	8.1E-03	--	0.0%	9.4E-02	3.1E-01	55.0%	2.5E-03	--	0.0%	1.9E-02	6.4E-02	55.0%
Manganese	194.00	NA	2.30E-02	5.7E-05	--	0.0%	2.7E-04	1.2E-02	18.9%	2.1E-04	--	0.0%	2.5E-03	1.1E-01	18.9%	5.5E-05	--	0.0%	5.0E-04	2.2E-02	18.9%
				Total ILCR:	2.6E-05	100.0%		HI:	6.1E-02	100.0%	Total ILCR:	9.7E-05	100.0%		HI:	5.7E-01	100.0%	Total ILCR:	3.0E-05	100.0%		HI:	1.2E-01	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE ON-SITE RESIDENTS
ACCIDENTAL INGESTION OF SITE 17 (SOIL AOC) SURFACE SOILS
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NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cs*IR*CF*FI*EF*ED)/(BW*AT)
ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	Adult	Younger Child (1-6 Yrs Old)	Older Child (7-15 Yrs Old)	
CDI	Chronic daily intake (mg/kg/d)	CS	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	CS	
HQ	Hazard quotient	CS	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	CS	CS	
IR	Ingestion Rate (mg/d)	50	100	50	
CF	Conversion factor (kg/mg)	1E-06	1E-06	1E-06	
FI	Fraction of soil ingested from site	1	1	1	
EF	Exposure Frequency (d/yr)	234	234	234	
ED	Exposure Duration (yrs)	15	6	9	
BW	Body weight (kg)	70	15	37	
ATc	Averaging time, carcinogens (d)	25550	25550	25550	
ATn	Averaging time, noncarcinogens (d)	5475	2190	3285	

				Adult Residents						Child Residents						Adolescent Residents					
				Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)anthracene	2.37	7.30E-01	NA	2.3E-07	1.7E-07	4.5%	1.1E-06	--	0.0%	8.7E-07	6.3E-07	4.5%	1.0E-05	--	0.0%	2.6E-07	1.9E-07	4.5%	2.0E-06	--	0.0%
Benzo(a)pyrene	3.24	7.30E+00	NA	3.2E-07	2.3E-06	62.0%	1.5E-06	--	0.0%	1.2E-06	8.7E-06	62.0%	1.4E-05	--	0.0%	3.6E-07	2.6E-06	62.0%	2.8E-06	--	0.0%
Benzo(b)fluoranthene	3.20	7.30E-01	NA	3.1E-07	2.3E-07	6.1%	1.5E-06	--	0.0%	1.2E-06	8.6E-07	6.1%	1.4E-05	--	0.0%	3.6E-07	2.6E-07	6.1%	2.8E-06	--	0.0%
Dibenzo(a,h)anthracene	0.63	7.30E+00	NA	6.2E-08	4.5E-07	12.1%	2.9E-07	--	0.0%	2.3E-07	1.7E-06	12.1%	2.7E-06	--	0.0%	7.0E-08	5.1E-07	12.1%	5.5E-07	--	0.0%
Indeno(1,2,3-cd)pyrene	1.49	7.30E-01	NA	1.5E-07	1.1E-07	2.8%	6.8E-07	--	0.0%	5.4E-07	4.0E-07	2.8%	6.4E-06	--	0.0%	1.7E-07	1.2E-07	2.8%	1.3E-06	--	0.0%
Arsenic	3.15	1.50E+00	3.00E-04	3.1E-07	4.6E-07	12.4%	1.4E-06	4.8E-03	29.6%	1.2E-06	1.7E-06	12.4%	1.3E-05	4.5E-02	29.6%	3.5E-07	5.3E-07	12.4%	2.7E-06	9.1E-03	29.6%
Iron	5647.50	NA	3.00E-01	5.5E-04	--	0.0%	2.6E-03	8.6E-03	53.1%	2.1E-03	--	0.0%	2.4E-02	8.0E-02	53.1%	6.3E-04	--	0.0%	4.9E-03	1.6E-02	53.1%
Manganese	141.45	NA	2.30E-02	1.4E-05	--	0.0%	6.5E-05	2.8E-03	17.3%	5.2E-05	--	0.0%	6.0E-04	2.6E-02	17.3%	1.6E-05	--	0.0%	1.2E-04	5.3E-03	17.3%
				Total ILCR:	3.7E-06	100.0%	HI:	1.6E-02	100.0%	Total ILCR:	1.4E-05	100.0%	HI:	1.5E-01	100.0%	Total ILC	4.2E-06	100.0%	HI:	3.1E-02	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE ON-SITE RESIDENTS
DERMAL CONTACT WITH SITE 17 (SOIL AOC) SURFACE SOILS
RME EXPOSURE SCENARIO
SUMMARY OF DERMAL ABSORBED DOSES (DADs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cs*CF*AF*ABS*SA*EF*ED)/(BW*AT)
ILCR = CDI*CSFo Adj CSF Adj = CSF/AE
HQ = CDI/RfDo Adj RfD Adj = RfD*AE

Parameter	Description	Adult	Younger Child (1-6 Yrs Old)	Older Child (7-15 Yrs Old)	
DAD	Dermally absorbed dose (mg/kg/d)	CS	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	CS	
HQ	Hazard quotient	CS	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	CS	CS	
CF	Conversion factor (kg/mg)	1E-06	1E-06	1E-06	
AF	Soil to skin adherence factor (mg/cm2-event)	1	1	1	
ABS	Absorption fraction	CS	CS	CS	
SA	Skin surface area available for contact (cm2)	5300	2006	3295	
EF	Exposure Frequency (d/yr)	350	350	350	
ED	Exposure Duration (yrs)	15	6	9	
BW	Body weight (kg)	70	15	37	
ATc	Averaging time, carcinogens (d)	25550	25550	25550	
ATn	Averaging time, noncarcinogens (d)	5475	2190	3285	
AE	Adjustment for Absorptin Efficiency	CS	CS	CS	

								Adult Residents						Child Residents						Adolescent Residents					
								Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	ABS	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	AE	Adj. CSFo 1/(mg/kg/d)	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)anthracene	5.68	0.1	7.30E-01	NA	(1)	NA	NA	8.8E-06	--	0.0%	4.1E-05	--	0.0%	6.2E-06	--	0.0%	7.3E-05	--	0.0%	6.2E-06	--	0.0%	4.9E-05	--	0.0%
Benzo(a)pyrene	6.26	0.1	7.30E+00	NA	(1)	NA	NA	1.3E-05	--	0.0%	6.0E-05	--	0.0%	9.1E-06	--	0.0%	1.1E-04	--	0.0%	9.1E-06	--	0.0%	7.1E-05	--	0.0%
Benzo(b)fluoranthene	7.51	0.1	7.30E-01	NA	(1)	NA	NA	1.2E-05	--	0.0%	5.5E-05	--	0.0%	8.3E-06	--	0.0%	9.6E-05	--	0.0%	8.2E-06	--	0.0%	6.4E-05	--	0.0%
Dibenzo(a,h)anthracene	1.48	0.1	7.30E+00	NA	(1)	NA	NA	2.3E-06	--	0.0%	1.1E-05	--	0.0%	1.6E-06	--	0.0%	1.9E-05	--	0.0%	1.6E-06	--	0.0%	1.3E-05	--	0.0%
Indeno(1,2,3-cd)pyrene	3.75	0.1	7.30E-01	NA	(1)	NA	NA	5.8E-06	--	0.0%	2.7E-05	--	0.0%	4.1E-06	--	0.0%	4.8E-05	--	0.0%	4.1E-06	--	0.0%	3.2E-05	--	0.0%
Arsenic	3.50	0.03	1.50E+00	3.00E-04	0.95	1.58E+00	2.85E-04	1.6E-06	2.6E-06	100.0%	7.6E-06	2.7E-02	16.0%	1.2E-06	1.8E-06	100.0%	1.3E-05	4.7E-02	16.0%	1.2E-06	1.8E-06	100.0%	9.0E-06	3.1E-02	16.0%
Iron	7380.00	0.01	NA	3.00E-01	0.5	NA	3.00E-01	1.1E-03	0.0E+00	0.0%	5.4E-03	1.8E-02	10.7%	8.1E-04	0.0E+00	0.0%	9.5E-03	3.2E-02	10.7%	8.1E-04	0.0E+00	0.0%	6.3E-03	2.1E-02	10.7%
Manganese	194.00	0.01	NA	2.30E-02	0.05	NA	1.15E-03	3.0E-05	--	0.0%	1.4E-04	1.2E-01	73.3%	2.1E-05	--	0.0%	2.5E-04	2.2E-01	73.3%	2.1E-05	--	0.0%	1.7E-04	1.4E-01	73.3%
								Total ILCR:	2.6E-06	100.0%		HI:	1.7E-01	Total ILCR:	1.8E-06	100.0%		HI:	3.0E-01	Total ILCR:	1.8E-06	100.0%		HI:	2.0E-01

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.
(1) PAHs not evaluated for dermal absorption since observed effects occur at point of contact.

TABLE
FUTURE ON-SITE RESIDENTS
DERMAL CONTACT WITH SITE 17 (SOIL AOC) SURFACE SOILS
CT *EXPOSURE SCENARIO*
SUMMARY OF DERMAL ABSORBED DOSES (DADs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cs*CF*AF*ABS*SA*EF*ED)/(BW*AT)
ILCR = CDI*CSFo Adj CSF Adj = CSF/AE
HQ = CDI/RfDo Adj RfD Adj = RfD*AE

Parameter	Description	Adult	Younger Child (1-6 Yrs Old)	Older Child (7-19 Yrs Old)	
DAD	Dermally absorbed dose (mg/kg/d)	CS	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	CS	
HQ	Hazard quotient	CS	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	CS	
Cs	Concentration of chemical in soil (mg/kg)	CS	CS	CS	
CF	Conversion factor (kg/mg)	1E-06	1E-06	1E-06	
AF	Soil to skin adherence factor (mg/cm2-event)	1	1	1	
ABS	Absorption fraction	CS	CS	CS	
SA	*Skin surface area available for contact (cm2)*	5000	1745	3188	
EF	Exposure Frequency (d/yr)	234	234	234	
ED	Exposure Duration (yrs)	15	6	9	
BW	Body weight (kg)	70	15	37	
ATc	Averaging time, carcinogens (d)	25550	25550	25550	
ATn	Averaging time, noncarcinogens (d)	5475	2190	3285	
AE	Adjustment for Absorptin Efficiency	CS	CS	CS	

								Adult Residents						*Child Residents*						*Adolescent Residents*					
								Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cs (mg/kg)	ABS	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	AE	Adj. CSFo 1/(mg/kg/d)	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI
Benzo(a)anthracene	2.37	0.1	7.30E-01	NA	(1)	NA	NA	2.3E-06	--	0.0%	1.1E-05	--	0.0%	1.5E-06	--	0.0%	1.8E-05	--	0.0%	1.7E-06	--	0.0%	1.3E-05	--	0.0%
Benzo(a)pyrene	3.24	0.1	7.30E+00	NA	(1)	NA	NA	3.2E-06	--	0.0%	1.5E-05	--	0.0%	2.1E-06	--	0.0%	2.4E-05	--	0.0%	2.3E-06	--	0.0%	1.8E-05	--	0.0%
Benzo(b)fluoranthene	3.20	0.1	7.30E-01	NA	(1)	NA	NA	3.1E-06	--	0.0%	1.5E-05	--	0.0%	2.0E-06	--	0.0%	2.4E-05	--	0.0%	2.3E-06	--	0.0%	1.8E-05	--	0.0%
Dibenzo(a,h)anthracene	0.63	0.1	7.30E+00	NA	(1)	NA	NA	6.2E-07	--	0.0%	2.9E-06	--	0.0%	4.0E-07	--	0.0%	4.7E-06	--	0.0%	4.5E-07	--	0.0%	3.5E-06	--	0.0%
Indeno(1,2,3-cd)pyrene	1.49	0.1	7.30E-01	NA	(1)	NA	NA	1.5E-06	--	0.0%	6.8E-06	--	0.0%	9.5E-07	--	0.0%	1.1E-05	--	0.0%	1.1E-06	--	0.0%	8.2E-06	--	0.0%
Arsenic	3.15	0.03	1.50E+00	3.00E-04	0.95	1.58E+00	2.85E-04	9.3E-07	1.5E-06	100.0%	4.3E-06	1.5E-02	18.9%	6.0E-07	9.5E-07	100.0%	7.0E-06	2.5E-02	18.9%	6.7E-07	1.1E-06	100.0%	5.2E-06	1.8E-02	18.9%
Iron	5647.50	0.01	NA	3.00E-01	0.5	NA	3.00E-01	5.5E-04	0.0E+00	0.0%	2.6E-03	8.6E-03	10.8%	3.6E-04	0.0E+00	0.0%	4.2E-03	1.4E-02	10.8%	4.0E-04	0.0E+00	0.0%	3.1E-03	1.0E-02	10.8%
Manganese	141.45	0.01	NA	2.30E-02	0.05	NA	1.15E-03	1.4E-05	--	0.0%	6.5E-05	5.6E-02	70.3%	9.0E-06	--	0.0%	1.1E-04	9.2E-02	70.3%	1.0E-05	--	0.0%	7.8E-05	6.8E-02	70.3%
								Total ILCR:	1.5E-06	100.0%		HI:	8.0E-02	100.0%	Total ILCR:	9.5E-07	100.0%		HI:	1.3E-01	100.0%	Total ILCR:	1.1E-06	100.0%		HI:	9.7E-02	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.
(1) PAHs not evaluated for dermal absorption since observed effects occur at point of contact.

TABLE
FUTURE ON-SITE RESIDENTS
INGESTION OF SHALLOW GROUNDWATER AS DRINKING WATER AT SITE 17 UNDER BENEFICIAL USE SCENARIO
ORGANIC AND FILTERED INORGANIC COPCs
RME EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cw*IR*EF*ED)/(BW*AT)
ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	Adult	Older Child (7-15 Yrs Old)	Younger Child (1-6 Yrs Old)	
CDI	Chronic daily intake (mg/kg/d)	CS	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	CS	
HQ	Hazard quotient	CS	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	CS	
Cw	Concentration of chemical in water (mg/L)	CS	CS	CS	
IR	Ingestion Rate (L/d)	0.05	0.05	0.05	
EF	Exposure Frequency (d/yr)	40	40	40	
ED	Exposure Duration (yrs)	15	9	6	
BW	Body weight (kg)	70	37	15	
ATc	Averaging time, carcinogens (d)	25550	25550	25550	
ATn	Averaging time, noncarcinogens (d)	5475	3285	2190	

				Adult Residents						Adolescent Residents						Child Residents					
				Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cw (mg/L)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI
amino-Dinitrotoluenes	0.0013	NA	6.00E-05	2.2E-08	--	0.0%	1.0E-07	1.7E-03	64.7%	2.5E-08	--	0.0%	1.9E-07	3.2E-03	64.7%	4.1E-08	--	0.0%	4.7E-07	7.9E-03	64.7%
Dissolved Iron	2.3363	NA	3.00E-01	3.9E-05	--	0.0%	1.8E-04	6.1E-04	23.3%	4.4E-05	--	0.0%	3.5E-04	1.2E-03	23.3%	7.3E-05	--	0.0%	8.5E-04	2.8E-03	23.3%
Dissolved Manganese	0.09289	NA	2.30E-02	1.6E-06	--	0.0%	7.3E-06	3.2E-04	12.1%	1.8E-06	--	0.0%	1.4E-05	6.0E-04	12.1%	2.9E-06	--	0.0%	3.4E-05	1.5E-03	12.1%
				Total ILCR:	0.0E+00	0.0%		HI:	2.6E-03	Total ILCR:	0.0E+00	0.0%		HI:	5.0E-03	Total ILCR:	0.0E+00	0.0%		HI:	1.2E-02

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE ON-SITE RESIDENTS
INGESTION OF SHALLOW GROUNDWATER AS DRINKING WATER AT SITE 17 UNDER BENEFICIAL USE SCENARIO
ORGANIC AND FILTERED INORGANIC COPCs
CT EXPOSURE SCENARIO
SUMMARY OF CHRONIC DAILY INTAKES (CDIs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

CDI (mg/kg/d)= (Cw*IR*EF*ED)/(BW*AT)
ILCR = CDI*CSFo
HQ = CDI/RfDo

Parameter	Description	Adult	Older Child (7-15 Yrs Old)	Young Child (1-6 Yrs Old)	
CDI	Chronic daily intake (mg/kg/d)	CS	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	CS	
HQ	Hazard quotient	CS	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	CS	
Cw	Concentration of chemical in water (mg/L)	CS	CS	CS	
IR	Ingestion Rate (L/d)	0.05	0.05	0.05	
EF	Exposure Frequency (d/yr)	40	40	40	
ED	Exposure Duration (yrs)	15	9	6	
BW	Body weight (kg)	70	37	15	
ATc	Averaging time, carcinogens (d)	25550	25550	25550	
ATn	Averaging time, noncarcinogens (d)	5475	3285	2190	

				Adult Residents						Adolescent Residents						Child Residents					
				Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cw (mg/L)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILCR	CDI (mg/kg/d)	HQ	% Contrib. HI	CDI (mg/kg/d)	ILCR	% Contrib. Total ILC	CDI (mg/kg/d)	HQ	% Contrib. HI
amino-Dinitrotoluenes	0.0013	NA	6.00E-05	2.2E-08	--	0.0%	1.0E-07	1.7E-03	82.6%	2.5E-08	--	0.0%	1.9E-07	3.2E-03	82.6%	4.1E-08	--	0.0%	4.7E-07	7.9E-03	82.6%
Dissolved Iron	0.83876	NA	3.00E-01	1.4E-05	--	0.0%	6.6E-05	2.2E-04	10.7%	1.6E-05	--	0.0%	1.2E-04	4.1E-04	10.7%	2.6E-05	--	0.0%	3.1E-04	1.0E-03	10.7%
Dissolved Manganese	0.04038	NA	2.30E-02	6.8E-07	--	0.0%	3.2E-06	1.4E-04	6.7%	7.7E-07	--	0.0%	6.0E-06	2.6E-04	6.7%	1.3E-06	--	0.0%	1.5E-05	6.4E-04	6.7%
				Total ILCR:	0.0E+00	0.0%		HI:	2.1E-03	Total ILCR:	0.0E+00	0.0%		HI:	3.9E-03	Total ILC	0.0E+00	0.0%		HI:	9.6E-03	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE ON-SITE RESIDENTS
DERMAL CONTACT WITH SHALLOW GROUNDWATER AT SITE 17 UNDER BENEFICIAL USE SCENARIO
ORGANIC AND FILTERED INORGANIC COPCs
RME EXPOSURE SCENARIO
SUMMARY OF DERMAL ABSORBED DOSES (DADs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cw*CF*Kp*SA*EF*ED*ET)/(BW*AT)

ILCR = CDI*CSFo Adj CSF Adj = CSF/AE
HQ = CDI/RfDo Adj RfD Adj = RfD*AE

Parameter	Description	Adult	Older Child (7-15 Yrs Old)	Younger Child (1-6 Yrs Old)	
DAD	Dermally absorbed dose (mg/kg/d)	CS	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	CS	
HQ	Hazard quotient	CS	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	CS	
SA	Skin surface area available for contact (cm2)	5300	3925	2006	
ET	Exposure frequency (d/yr)	40	40	40	
ED	Exposure duration (yrs)	15	9	6	
ET	Exposure time (hrs/day)	1	1	1	
BW	Body weight (kg)	70	37	15	
ATc	Averaging time, carcinogens (d)	25550	25550	25550	
ATn	Averaging time, noncarcinogens (d)	5475	3285	2190	
Cw	Concentration of chemical in water (mg/L)	CS	CS	CS	
CF	Conversion factor (L/cm3)	0.001	0.001	0.001	
Kp	Dermal permeability coefficient (cm/hour)	CS	CS	CS	
AE	Adjustment for Absorption Efficiency	CS	CS	CS	

								Adult Residents						Adolescent Residents						Child Residents					
								Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cw (mg/L)	Kp (cm/hour)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	AE (unitless)	Adj CSFo 1/(mg/kg/d)	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILC	DAD (mg/kg/d)	HQ	% Contrib. HI
amino-Dinitrotoluenes	0.0013	2.40E-03	NA	6.00E-05	0.50	NA	3.00E-05	5.5E-09	--	0.0%	2.6E-08	8.6E-04	46.5%	4.7E-09	--	0.0%	3.6E-08	1.2E-03	46.5%	3.9E-09	--	0.0%	4.6E-08	1.5E-03	46.5%
Dissolved Iron	2.3363	1.00E-03	NA	3.00E-01	0.20	NA	6.00E-02	4.2E-06	--	0.0%	1.9E-05	3.2E-04	17.4%	3.5E-06	--	0.0%	2.7E-05	4.5E-04	17.4%	2.9E-06	--	0.0%	3.4E-05	5.7E-04	17.4%
Dissolved Manganese	0.09289	1.00E-03	NA	2.30E-02	0.05	NA	1.15E-03	1.7E-07	--	0.0%	7.7E-07	6.7E-04	36.1%	1.4E-07	--	0.0%	1.1E-06	9.4E-04	36.1%	1.2E-07	--	0.0%	1.4E-06	1.2E-03	36.1%
								Total ILCR:	0.0E+00	0.0%	HI:	1.9E-03	100.0%	Total ILCR:	0.0E+00	0.0%	HI:	2.6E-03	100.0%	Total ILC	0.0E+00	0.0%	HI:	3.3E-03	100.0%

NOTES:
NA - Toxicity criterion not available.
-- Not applicable.

TABLE
FUTURE ON-SITE RESIDENTS
DERMAL CONTACT WITH SHALLOW GROUNDWATER AT SITE 17 UNDER BENEFICIAL USE SCENARIO
ORGANIC AND FILTERED INORGANIC COPCs
CT EXPOSURE SCENARIO
SUMMARY OF DERMAL ABSORBED DOSES (DADs),
POTENTIAL CARCINOGENIC AND NONCARCINOGENIC RISKS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

DAD (mg/kg/d)= (Cw*CF*Kp*SA*EF*ED*ET)/(BW*AT)

ILCR = CDI*CSFo Adj CSF Adj = CSF/AE
HQ = CDI/RfDo Adj RfD Adj = RfD*AE

Parameter	Description	Adult	Older Child (7-15 Yrs Old)	Young Child (1-6 Yrs Old)	
DAD	Dermally absorbed dose (mg/kg/d)	CS	CS	CS	(Chemical Specific)
ILCR	Incremental lifetime cancer risk	CS	CS	CS	
CSFo	Oral cancer slope factor (1/(mg/kg/d))	CS	CS	CS	
HQ	Hazard quotient	CS	CS	CS	
RfDo	Oral reference dose (mg/kg/d)	CS	CS	CS	
SA	Skin surface area available for contact (cm2)	5000	3188	1745	
ET	Exposure frequency (d/yr)	40	40	40	
ED	Exposure duration (yrs)	21	9	6	
ET	Exposure time (hrs/day)	1	1	1	
BW	Body weight (kg)	70	37	15	
ATc	Averaging time, carcinogens (d)	25550	25550	25550	
ATn	Averaging time, noncarcinogens (d)	7665	3285	2190	
Cw	Concentration of chemical in water (mg/L)	CS	CS	CS	
CF	Conversion factor (L/cm3)	0.001	0.001	0.001	
Kp	Dermal permeability coefficient (cm/hour)	CS	CS	CS	
AE	Adjustment for Absorption Efficiency	CS	CS	CS	

								Adult Residents						Adolescent Residents						Child Residents					
								Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens			Carcinogens			Noncarcinogens		
Parameter	Cw (mg/L)	Kp (cm/hour)	CSFo 1/(mg/kg/d)	RfDo (mg/kg/d)	AE (unitless)	Adj CSFo 1/(mg/kg/d)	Adj RfDo (mg/kg/d)	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILCR	DAD (mg/kg/d)	HQ	% Contrib. HI	DAD (mg/kg/d)	ILCR	% Contrib. Total ILC	DAD (mg/kg/d)	HQ	% Contrib. HI
amino-Dinitrotoluenes	0.0013	2.40E-03	NA	6.00E-05	0.50	NA	3.00E-05	7.3E-09	--	0.0%	2.4E-08	8.1E-04	67.9%	3.8E-09	--	0.0%	2.9E-08	9.8E-04	67.9%	3.4E-09	--	0.0%	4.0E-08	1.3E-03	67.9%
Dissolved Iron	0.83678	1.00E-03	NA	3.00E-01	0.20	NA	6.00E-02	2.0E-06	--	0.0%	6.6E-06	1.1E-04	9.1%	1.0E-06	--	0.0%	7.9E-06	1.3E-04	9.1%	9.2E-07	--	0.0%	1.1E-05	1.8E-04	9.1%
Dissolved Manganese	0.04038	1.00E-03	NA	2.30E-02	0.05	NA	1.15E-03	9.5E-08	--	0.0%	3.2E-07	2.7E-04	22.9%	4.9E-08	--	0.0%	3.8E-07	3.3E-04	22.9%	4.4E-08	--	0.0%	5.1E-07	4.5E-04	22.9%
								Total ILCR:	0.0E+00	0.0%	HI:	1.2E-03	100.0%	Total ILCR:	0.0E+00	0.0%	HI:	1.4E-03	100.0%	Total ILC	0.0E+00	0.0%	HI:	2.0E-03	100.0%

NOTES:
NA = Toxicity criterion not available.
-- Not applicable.

APPENDIX K
PATHWAY-SPECIFIC RISK CHARACTERIZATION SUMMARY TABLES FOR ACCEPTABLE RISK SCENARIOS

TABLE K-1

INCREMENTAL LIFETIME CANCER RISK (ICR) AND HAZARD INDEX (HI)[1]
FOR CURRENT ON-STATION ADULT AND ADOLESCENT TRESPASSERS
RME VALUES
SITE 11
NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA

Pathway	Receptors			
	Adults		Adolescents (7-15 years)	
	ICR	HI	ICR	HI
Surface Soil				
Ingestion	3.7×10^{-7}	0.01	4.2×10^{-7}	0.03
Dermal Contact	6.2×10^{-7}	0.02	2.6×10^{-7}	0.03
Subtotal	9.9×10^{-7}	0.03	6.8×10^{-7}	0.06
Sediment				
Ingestion	4.3×10^{-7}	0.01	4.9×10^{-7}	0.03
Dermal Contact	7.2×10^{-7}	0.01	3.0×10^{-7}	0.01
Subtotal	1.2×10^{-6}	0.02	7.9×10^{-7}	0.04
TOTAL	2.2×10^{-6}	0.05	1.5×10^{-6}	0.10

TABLE K-2

INCREMENTAL LIFETIME CANCER RISK (ICR) AND HAZARD INDEX (HI)[1]
FOR CURRENT ON-STATION ADULT AND ADOLESCENT TRESPASSERS
RME VALUES
SITE 17
NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA

Pathway	Receptors			
	Adults		Adolescents (5-15 years)	
	ICR	HI	ICR	HI
Surface Soil - Proper				
Ingestion	1.3×10^{-7}	<0.01	7.2×10^{-8}	<0.01
Dermal Contact	3.2×10^{-7}	0.04	1.3×10^{-7}	0.05
Subtotal	4.5×10^{-7}	0.04	2.0×10^{-7}	0.05
Surface Soil - Soil AOC				
Ingestion	1.9×10^{-6}	<0.01	1.1×10^{-6}	<0.01
Dermal Contact	3.8×10^{-7}	0.01	1.6×10^{-7}	0.02
Subtotal	2.3×10^{-6}	0.01	1.3×10^{-6}	0.02
TOTAL (Proper only)	4.5×10^{-7}	0.04	2.0×10^{-7}	0.05
TOTAL (with Soil AOC)	2.8×10^{-6}	0.05	1.5×10^{-6}	0.07

TABLE K-3

INCREMENTAL LIFETIME CANCER RISK (ICR) AND HAZARD INDEX (HI)[1]
FOR FUTURE ADULT CONSTRUCTION WORKERS
RME VALUES
SITE 11
NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA

Pathway	Adult Construction Worker	
	ICR	HI
Shallow Subsurface Soil		
Ingestion	8.7×10^{-8}	0.01
Dermal Contact	3.0×10^{-8}	<0.01
Inhalation	1.4×10^{-11}	NA
Subtotal	1.2×10^{-7}	0.01
Subsurface Soil		
Ingestion	3.5×10^{-7}	0.13
Dermal Contact	1.2×10^{-7}	0.06
Inhalation	5.6×10^{-11}	NA
Subtotal	4.7×10^{-7}	0.19
Shallow Groundwater		
Dermal Contact	1.2×10^{-9}	<0.01
TOTAL	5.9×10^{-7}	0.20

Notes:

NA = Not applicable. No toxicity criteria available or no noncarcinogens selected as COPCs.

TABLE K-4

INCREMENTAL LIFETIME CANCER RISK (ICR) AND HAZARD INDEX (HI)[1]
FOR FUTURE ADULT CONSTRUCTION WORKERS
RME VALUES
SITE 17
NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA

Pathway	Adult Construction Worker	
	ICR	HI
Shallow Subsurface Soil - Proper		
Ingestion	2.5×10^{-7}	0.11
Dermal Contact	8.9×10^{-8}	0.05
Inhalation	4.0×10^{-11}	NA
Subtotal	3.4×10^{-7}	0.16
Shallow Subsurface Soil - Soil AOC		
Ingestion	3.5×10^{-6}	0.06
Dermal Contact	4.9×10^{-8}	0.03
Inhalation	4.5×10^{-11}	NA
Subtotal	3.5×10^{-6}	0.09
Subsurface Soil		
Ingestion	3.9×10^{-7}	0.13
Dermal Contact	1.0×10^{-07}	0.06
Inhalation	4.6×10^{-11}	NA
Subtotal	4.9×10^{-7}	0.19
Shallow Groundwater		
Dermal Contact	9.5×10^{-8}	0.07
TOTAL (Proper Only)	9.3×10^{-7}	0.42
TOTAL (with Soil AOC)	4.4×10^{-6}	0.51

Notes:

NA = Not applicable. No toxicity criteria available.

TABLE K-5

INCREMENTAL LIFETIME CANCER RISK (ICR) AND HAZARD INDEX (HI)[1]
FOR FUTURE ON-STATION ADULT INDUSTRIAL/COMMERCIAL WORKERS
RME VALUES
SITE 11
NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA

Pathway	Adult Receptor	
	ICR	HI
Surface Soil		
Ingestion	7.4×10^{-7}	0.02
Dermal Contact	1.3×10^{-8}	<0.01
Inhalation	2.1×10^{-8}	<0.01
TOTAL	7.7×10^{-7}	0.02

TABLE K-6

INCREMENTAL LIFETIME CANCER RISK (ICR) AND HAZARD INDEX (HI)[1]
FOR FUTURE ON-STATION ADULT INDUSTRIAL/COMMERCIAL WORKERS
RME VALUES
SITE 17
NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA

Pathway	Adult Receptor	
	ICR	HI
Surface Soil - Proper		
Ingestion	5.1×10^{-7}	0.01
Dermal Contact	1.4×10^{-7}	<0.01
Inhalation	1.2×10^{-9}	<0.01
Subtotal	6.5×10^{-7}	0.01
Surface Soil - Soil AOC		
Ingestion	1.7×10^{-6}	0.01
Dermal Contact	2.3×10^{-6}	<0.01
Inhalation	1.7×10^{-9}	<0.01
Subtotal	4.0×10^{-6}	0.01
TOTAL (Proper only)	6.5×10^{-7}	0.01
TOTAL (with Soil AOC)	4.7×10^{-6}	0.02

APPENDIX L
ECOLOGICAL RISK ASSESSMENT SUPPLEMENTAL INFORMATION

APPENDIX L.1
ECOLOGICAL TOXICOLOGICAL PROFILES

L.1-ECOLOGICAL TOXICOLOGICAL PROFILES

BIS(2-ETHYLHEXYL)PHTHALATE

Bis(2-ethylhexyl)phthalate (BEHP) is an artificial chemical that is added to plastics to increase their flexibility. BEHP is a colorless liquid with no odor. BEHP released into the atmosphere will be carried long distances and removed by rain. It is unknown whether direct photolysis or photoxidation are important atmospheric processes (Howard, 1990). Volatilization from soil and water is not expected be important pathways due to the low Henry's law constant. Released to soil, BEHP degrades at a slow rate (ATSDR, 1991e).

It is estimated that the evaporative half-life of BEHP from water is 15 years. Biodegradation is an important fate process of BEHP in water under aerobic conditions. The estimated half-life of BEHP in water is 2-3 weeks (Howard, 1990). BEHP released to water tends to absorb strongly to suspended particulates and sediment. Adsorption of BEHP to marine sediments is greater than adsorption to freshwater sediments (ATSDR, 1991e). Complexation of BEHP with fulvic acid (a compound associated with humic substances) may increase solubilization and thus increase the mobility of BEHP in aquatic systems (ATSDR, 1991e). In sediments, optimum biodegradation occurs with high concentrations, warm temperatures, and nutrient-rich water.

Bioconcentration and accumulation of BEHP have been noted in fish, invertebrates, and terrestrial organisms (ATSDR, 1991e).

DIBENZOFURAN

The environmental fate of dibenzofuran is not known. One could predict that, given its water solubility, dibenzofuran would tend to migrate in surface waters primarily by sediment transport. Also, considering its octanol/water partition coefficient, dibenzofuran would tend to partition into soils and sediments with significant organic content.

POLYNUCLEAR AROMATIC HYDROCARBONS

The polynuclear aromatic hydrocarbons (PAHs) are a diverse group of compounds consisting of two or more substituted and unsubstituted polycyclic aromatic rings formed by the incomplete combustion of carbonaceous materials (ATSDR, 1990a).

PAHs also are released to the environment through natural sources such as volcano and forest fire emissions. However, most of the emissions result from anthropogenic sources, largely wood burning for homes. Vehicular emissions are another primary source of PAHs. Hazardous waste sites can be a concentrated source on a local scale. Examples of such sites include former manufactured gas sites (i.e., sources of coal tar) and abandoned wood treatment plants (i.e., sources of creosote) (ATSDR, 1990a).

PAHs are transferred from surface water by volatilization and sorption to settling particles. The compounds are transformed in surface water by photooxidation, chemical oxidation, and microbial metabolism (ATSDR, 1990a).

In soil and sediments, microbial metabolism is the major process for degradation of PAHs (ATSDR, 1990a). Although PAHs accumulate in terrestrial and aquatic plants, many organisms can metabolize and eliminate these compounds. Fish and crustaceans readily assimilate PAHs from contaminated food, whereas mollusks and polychaete worms have limited assimilation (Eisler, 1987a). Biomagnification has not been reported because of the tendency of many aquatic organisms to eliminate these compounds rapidly (Eisler 1987a).

As with fish and many aquatic invertebrates, PAHs are carcinogenic, mutagenic, and cytotoxic to mammals (Eisler, 1987a). Direct application of PAHs has shown to produce tumors in skin and epithelial tissues of mice and rats (USEPA, 1980). Many PAHs are transferred across skin, lungs, and intestines, and may be transferred to fetuses if the mother is exposed. Dietary ingestion of PAHs has been shown to cause mammary cancer, leukemia, lung, and stomach tumors in laboratory mice and rats (Dipple, 1985). Acute and chronic exposure to carcinogenic PAHs is known to result in destruction of bone marrow and lymphoid tissues, negative gametogenic effects, kidney damage, and changes in intestinal and respiratory epithelia (Lee and Grant, 1981). Application of some PAHs to the skin of mammals causes the destruction of sebaceous glands, hyperplasia, hyperkeratosis, and ulceration (USEPA, 1980). Newborn mice exposed to PAHs may die of acute or chronic wasting disease, develop thymomas, and suffer from serious damage to the thymus (USEPA, 1980). PAH compounds have also been associated with oocyte and follicle destruction in mouse ovaries (Ward et al., 1985).

PAH carcinogens generally transform cells by genetic injury. The parent PAH compound is metabolized by the mixed-function oxidase pathway to a reactive intermediate, which can in turn bind with cellular macromolecules which results in cell transformation and induction of tumors (Dipple 1985; Ward et al. 1985).

In addition to the cytotoxic, mutagenic, and carcinogenic effects of PAH exposure to mammals, many carcinogenic PAH compounds also have negative effects on the immune system (Ward et al. 1985). Noncarcinogenic PAH compounds do not have immunosuppressive effects on mammals. Usually, the more carcinogenic a PAH compound is, the more immuno-suppressive it is.

AMINO-DINITROTOLUENE

Amino-dinitrotoluene is formed during the production of TNT and also is formed in the bacterial reduction of TNT. 2-amino-4,6-DNT has a low soil adsorption coefficient which indicates low adsorption to soil and probable migration to groundwater. Biotransformation of DNTs and its metabolites appears to be very slow. Based on a limited number of uptake and metabolism studies, 2-amino-4,6-DNT does not bioaccumulate in plants, either due to metabolism or lack of uptake. No information on bioaccumulation, residue values, or sediment-associated organisms were located. Based on the limited toxicity studies for 2-amino-4,6-DNT, acute effects on invertebrates and fish were not observed and no data on chronic exposures of aquatic organisms were located.

Based on the administration of 2,4,6-trinitrotoluene to mammalian species, the compound appears to be metabolized and excreted in the urine (Talmage, 1996). 2-amino-4,6-dinitrotoluene is excreted primarily as a glucuronide conjugate. Further reduction to 2,4-diamino-6-nitrotoluene and 2,6-diamino-4-nitrotoluene may take place prior to excretion as these metabolites are also found in the urine of mammalian species administered TNT (Talmage, 1996).

2,4,6-TRINITROTOLUENE

2,4,6-Trinitrotoluene (TNT) is a munitions chemical released to the environment from munitions production and processing facilities and through field use and disposal practices such as open burning. TNT is relatively insensitive to shock and must be exploded by a detonator. Small amounts may be used in industrial explosive applications and as a chemical intermediate in the manufacture of dyestuffs and photographic chemicals (ATSDR, 1995).

Photolysis is the primary transformation process in surface water or surface soil. In sunlit waters, TNT is rapidly transformed by photolysis, resulting in the development of red or pink water which is rich in nitroaromatic compounds. Photolysis would not be an important transformation mechanism in groundwater and below the surface of soils due to its limited partition or sorption to soils or sediments. TNT is biodegraded in water, soil, sediment, and sludge by bacterial and fungal species under both aerobic and anaerobic conditions. Reduction of a nitro group is the first step in transformation. Compounds formed include aminodinitrotoluenes, diaminonitrotoluenes, hydroxyaminodinitrotoluenes, 2,4,6-triaminotoluene, and tetranitroazotoluenes.

Acute effects studies of TNT on invertebrates and fish reported endpoint mortality ranging from > 4.4 mg/L to > 29 mg/L for invertebrates and 0.8 mg/L to 3.7 mg/L for fish. Chronic studies have shown that *Daphnia magna* showed no signs of effect (decreases in the number of young produced) at a concentration of 103 mg/L (Tallage, 1996).

Studies on the metabolism of TNT by aquatic organisms were not located in the available literature. Calculated and measured log octanol-water partition coefficients (log K_{ow}) values of 1.6 to 2.7 indicated a low potential for bioconcentration (ATSDR, 1995).

In mammalian species, TNT is absorbed by inhalation, ingestion, or skin contact. Metabolism is extensive and rapid, with 50 to 70 percent excreted in the urine and the remainder in the feces; the majority of the ingested compound is excreted within 24 hours. Distribution to the tissues is less than one percent. Although no laboratory studies on bioaccumulation were located, rapid metabolism and excretion in mammalian species indicates a low potential for bioaccumulation (Talmage, 1996).

ALUMINUM

Pure aluminum is a light, ductile metal. Aluminum is one of the most abundant metals in the earth's crust, and it is ubiquitous in air and water, as well as soil. It is an extremely versatile metal with a variety of uses, e.g., packaging materials, several types of containers, kitchen utensils, auto-bodies and components, airplanes and building panels. Certain aluminum compounds are used in paint pigment, insulating materials, abrasives, cosmetics and even food additives. Aluminum sulfate is used in the treatment of drinking water and sewage (Friberg et al., 1986).

The toxicity of aluminum may be divided into three major categories: the effect of aluminum compounds on the gastrointestinal tract; the effect of inhalation of aluminum compounds; and systemic toxicity of aluminum (Klaassen et al., 1986). Aluminum compounds can affect absorption of other elements in the gastrointestinal tract and by that alter intestinal junctions. Aluminum inhibits fluoride absorption and may decrease the absorption of calcium and iron compounds and possibly the absorption of cholesterol. It may alter gastrointestinal tract mobility through inhibition of acetylcholine-induced contractions that may explain why aluminum-containing antacids often produce constipation (Klaassen et al., 1986).

A progressively fatal neurologic syndrome also has been reported in patients on long-term intermittent hemodialysis treatment for chronic renal failure. The disorder, which typically arises after three to seven years of dialysis treatment, may be due to aluminum intoxication (Klaassen et al., 1986).

ANTIMONY

Antimony is a silvery gray lustrous metal that comes from ores stibinite, dermasite, tertrahedrite, livingstonite, and jamisonite (Sax, 1987). Stibinite is the most common naturally occurring form of antimony. Antimony is used as a hardening alloy for lead, solder, sheet and pipe, semiconductors, production of fireproofing chemicals, ceramics, glassware, pigments, and pyrotechnics (Hawley, 1987).

Antimony occurs as a soluble oxide or as antinomite (+3) salt in most natural waters. It may change to volatile stibinite in a reducing environment. Stibinite is very soluble in water, but is not stable under aerobic conditions. Sediment beds offer a reducing environment allowing for remobilization of antimony previously removed from solution. The sorption to clays and minerals is the most important mechanisms resulting in the removal of antimony from solution. Insoluble forms of antimony compounds may form when heavy metals in solution react with antimote or antimonate. Bioaccumulation represents a minor fate process for antimony (USEPA, 1985).

Antimony is slowly absorbed from the gastrointestinal tract. The metal accumulates in lung tissue when humans are exposed to antimony dust in an occupational setting. Trivalent antimony is concentrated in red blood cells and the liver. Pentavalent antimony is mostly found in plasma. Both trivalent and pentavalent antimony are excreted in feces and urine. More trivalent antimony is excreted in the urine, where more pentavalent antimony is excreted in the feces (Klaassen et al., 1987).

Studies indicate that antimony trioxide, antimony trichloride, and antimony pentachloride may be mutagenic. Reproduction studies indicated that female workers exposed to antimony dust had an increase in incident of gynecological disorders and late spontaneous abortions. Antimony was found in the breast milk, placental tissue, amniotic tissue, and blood of the umbilical cord in exposed workers. Intraperitoneal administration of antimony in rats supported the finding of the human reproductive effects (USEPA, 1985).

Animal studies support evidence of cardiovascular effects in humans. Changes in electrocardiograms, cardiac edema, myocardial fibrosis, and other signs of myocardial structural damage were observed in humans exposed to either trivalent or pentavalent antimonial compounds (USEPA, 1985).

Studies on rats indicated that antimony trioxide may produce lung and liver tumors (USEPA, 1985).

BERYLLIUM

Sediment is the ultimate sink for beryllium in water, and its association with sediment would decrease the mobility in water. Beryllium does not bioconcentrate to high levels in aquatic animals, although the bioconcentration in bottom dwelling animals may be higher than nonbottom-dwelling animals. There is no evidence of biomagnification of beryllium within terrestrial or aquatic food chains (ATSDR, 1991a).

Beryllium enters the body through inhalation of air, consumption of food, and contact with water. Based on animal studies, pulmonary adsorption does not appear to be extensive, and absorption through the gastrointestinal tract and the skin appears to be minimal. Animal studies indicate that once beryllium enters the body via inhalation, it is circulated in the blood as an orthophosphate colloid and then distributed to the

bone, lover, and kidneys in both humans and animals. Oral exposure of soluble beryllium in animal studies showed that distribution of the compound was mainly to the liver and intestine whereas insoluble beryllium was found mainly in the intestine. Although beryllium is not biotransformed, soluble beryllium compounds are partially converted to more insoluble forms in the lungs (ATSDR, 1991a).

The most profound effect from inhalation appears in the lungs. Exposure to beryllium oxide or to soluble beryllium compounds may lead to the development of acute chemical pneumonitis. Chronic exposure to insoluble forms may lead to berylliosis. The most common clinical symptom of berylliosis is a granulomatous lung inflammation. Additional respiratory effects are rhinities, pharyngitis, and tracheobronchitis. Besides the lung, beryllium also accumulates in the bone, liver, and kidneys (ATSDR, 1991a).

Beryllium is among the substances classified as a probable human carcinogen. This classification is based on limited evidence of carcinogenicity in humans from epidemiologic studies (IRIS, 1994). Studies indicating increased lung cancer in individuals who have been exposed to beryllium, failed to account for confounding factors such as lung cancer associated with smoking, and did not include employees of the beryllium industry who were not exposed to the beryllium (ATSDR, 1991a).

There has been sufficient information to link beryllium to lung cancer via inhalation in animals; osteosarcomas have been observed in rabbits via intravenous or intramedullary injection (IRIS, 1994). Also, there has been sufficient information to link beryllium to an induction of tumors via inhalation and intratracheal instillation in rats and monkeys, and the induction of osteosarcomas in rabbits by intravenous or intramedullary injection in multiple studies (ATSDR, 1991a).

CHROMIUM

Chromium is a semi-gray heavy metal that exists in either a trivalent (III) or hexavalent (VI) state. Chromium (III) occurs naturally in the environment; whereas, chromium (VI) is produced by industrial processes (ATSDR, 1991b).

In both freshwater and marine systems, hydrolysis and precipitation are the most important processes that determine the fate and effects of chromium; whereas, adsorption and bioaccumulation are relatively minor. Precipitated chromium (III) hydroxides remain in sediment under aerobic conditions. However, under anoxic and low pH conditions, chromium (III) hydroxides may solubilize and remain as ionic chromium (III) unless oxidized to chromium (VI) through mixing and aeration (Eisler, 1986).

Fish do not readily accumulated chromium from the water column. Chromium is not expected to biomagnify in the aquatic food chain. The bioavailability of chromium (III) to freshwater invertebrates decreases with the addition of humic acid. The decrease in bioavailability of the free form of chromium is due to its complexation with humic acid (ATSDR, 1991b).

Chromium released into soil is mainly water-insoluble or is bound to the soil. However, a small fraction of chromium in soil will dissolve and may be transported deeper in the soil to groundwater. The transport of chromium in soil is dependent on the type and condition of the soil. Chromium is present in most soils as chromium (III) (ATSDR, 1991b). Chromium (III), as an insoluble salt, tends to adhere strongly to clay particles and organic matter; whereas, soluble chromium (VI) is not strongly adsorbed to soil. The fate of chromium in soil is dependent on the redox potential and the pH of the soil (ATSDR, 1991b).

Plants growing in chromium-containing soil will uptake the chromium into its roots, but only a small fraction of the chromium will be translocated in the aboveground, edible portions of the plants. There is no evidence that chromium will be bioaccumulated in plants. In addition, there is no evidence that chromium will biomagnify along the terrestrial food chain (ATSDR, 1991b).

The toxicity of chromium (III) to mammals is low because of its membrane permeability is poor and it is noncorrosive. In addition, there is not a likelihood that chromium (III) will biomagnify in food chains. Chromium (VI) is considered more toxic to wildlife because of its high oxidizing potential and it easily penetrates biological membranes (ATSDR, 1991b).

The trivalent form of chromium is usually found in biological materials. This form functions as an essential element in mammals by maintaining efficient glucose, lipid, and protein metabolism (Stevens et al., 1976). Chromium is beneficial but not essential to higher plants (Eisler, 1986).

Chromium is mutagenic, carcinogenic, and teratogenic, with chromium (VI) exhibiting the greatest toxicity; relatively less is known about the toxicity of chromium (III). At high concentrations chromium (VI) is associated with abnormal enzyme activity, altered blood chemistry, lowered resistance to pathogenic organisms, behavioral modifications, disrupted feeding histopathology, osmoregulatory upset, alterations in population structure, and inhibition of photosynthesis (ATSDR, 1991b).

Rabbits fed chromium accumulated hyaluronate, chondroitin sulfates, and neural mucopolysaccharide in the soft tissues, causing pericappilary sclerosis (Kucher and Shabanov, 1976). This accumulation blocked blood tissue barriers, which are permeable under normal conditions, preventing the normal transport of metabolites. One manifestation of this condition was the inhibition of insulin production in the pancreatic islets due to damage to the beta cells contained therein.

The preliminary step in chromium-induced respiratory cancer is believed to be the scarring of alveolar tissue, followed by the elicitation of inflammatory reactions in lung tissue leading to bronchopneumonia, alveolar epithelial changes, atrophy, and benign tumor formation. Direct skin contact with high corrosive chromic acid and its anhydride produced skin ulcers and necrosis by mechanisms independent of any allergic response (Steven et al., 1976).

COBALT

Cobalt is a steel gray, shiny, hard, ductile ferromagnetic metal. Cobalt released into water is expected to take a soluble form. The mobility of cobalt is controlled by its characteristic of adsorbing to the clay minerals and hydrous oxides of iron, manganese, and aluminum available in sediments and soils. Chelation of cobalt is possible in sediments and soil (Hawley, 1987). Small amounts of cobalt may be solubilized by bacteriological activity. The effect of cobalt in the terrestrial environment is associated with nitrogen-fixation; however, excessive amounts can be toxic to plants. Vegetation is differentially susceptible to cobalt depending on the species. Grasses tend to be more susceptible to cobalt toxicity than broad leafed species (Davis, 1994).

In animal and human bodies, cobalt salts are well absorbed after oral ingestion, probably through the jejunum in the gastrointestinal tract. However, significant accumulation is not expected. Approximately 80 percent of all ingested cobalt is excreted in the urine with 15 percent of the remaining cobalt being excreted in the feces by an enterohepatic pathway. Breast milk and sweat are other secondary routes of excretion. Muscles contain the largest total fraction of cobalt, but fat has the highest concentrations. Among the organs that have

a significantly higher concentration of cobalt than other organs are the liver, heart, and the hair (USEPA, 1985).

Cobalt metals and cobalt oxide have caused sarcomas at the injection site in rats. However, these data are inconclusive for determining the carcinogenic potential of cobalt. Because there have been no other positive carcinogenic animal bioassays, it is unlikely that cobalt poses a carcinogenic risk to humans (USEPA, 1985).

In terms of noncarcinogenic effects, ingestion of excessive amounts of cobalt results in vomiting, diarrhea, and a sensation of warmth in humans. Upon intravenous administration, flushing of the face, increased blood pressure, slow respiration, giddiness, tinnitus, and deafness due to nerve damage have been reported. Chronic oral exposure can cause goiter and decreased thyroid function, increased heart and respiration rates, and changes in blood lipid chemistry (USEPA, 1985).

COPPER

Copper is a reddish-colored metal that occurs naturally in rock, soil, sediment, and air. Copper does not appear to have mutagenic properties (IRIS, 1990), but it is a teratogen (RTECS, 1991) and a possible carcinogen (Venugopal and Luckey, 1978). Copper is caustic with acute toxicity related to this causticity (Hatch, 1978).

The physicochemical form of copper released to the environment determines the impact of the element to the environment. Copper is released to water through natural weathering of soil and discharges from industries and sewage treatment plants. Copper released into water will most likely take the form of copper (II). Most copper in water is bound to organic matter; little is present in the free or readily exchangeable form. The concentration of dissolved copper in water is dependent on such factors as pH, the oxidation-reduction potential of the water, the presence of competing cations and anions of soluble cupric salts and the presence of organic/inorganic complexing agents (ATSDR, 1989a).

The process of complexation, adsorption, and precipitation control the amount of copper (II) released into water. Copper released into water tends to bind to the bottom sediments. Organics and iron oxides are the most important contributors to binding of copper by aerobic sediments. However, copper is typically associated with carbonates. In anaerobic sediment, copper (II) will be reduced to copper (I) and insoluble cuprous salts will form (ATSDR, 1989a).

Copper released to soil will be strongly adsorbed and remain in the upper few centimeters of soil. In most soils, the pH, organic matter, and ionic strength of the soil solutions are the key factors affected adsorption. Copper will adsorb to organic matter, carbonate minerals, clay minerals, or hydrous iron and manganese oxides. Sandy soils with low pH have the greatest potential for leaching (ATSDR, 1989a).

No data were found that studied absorption of copper through inhalation or dermal exposure. However, via oral exposure, copper is absorbed in the stomach and small intestine. In humans, approximately 60 percent of an oral dose of Cu^{64} as copper acetate was absorbed from the gastrointestinal tract. Once absorbed from the gastrointestinal tract, copper forms ionic copper or will bind to amino acids. The factors which may affect copper absorption include: competition with other metals, the amount of copper in the stomach, certain dietary components, and forms of copper (ATSDR, 1989a).

Wilson's disease (hepatolenticular degeneration), is the only significant manifestation of copper toxicity in humans. Death has been reported upon ingestion of large amounts of copper and attributed to extensive

hepatic centrilobular necrosis. Systemic effects induced by copper ingestion include gastrointestinal irritation, manifested as vomiting, nausea, diarrhea, and anorexia. In individuals totally poisoned from copper, centrilobular necrosis of the liver and necrosis and sloughing of tubular cells in the kidney have been observed (ATSDR, 1989a).

The EPA carcinogen classification for copper is Group D - inadequate evidence of carcinogenicity. An elevated incidence of cancer has not been observed in humans or animals exposed to copper via inhalation, oral, or dermal routes of exposure (ATSDR, 1989a).

CYANIDE

Cyanide is used widely and extensively in the manufacture of synthetic fabrics and plastics, in electroplating baths and metal mining operations, as pesticidal agents and intermediates in agricultural chemical production, and in predator control devices. Elevated cyanide levels are normally encountered in more than 1,000 species of food plants and forage crops, and this probably represents the greatest source of cyanide exposure and toxicosis to man and to range animals. Although cyanide is ubiquitous in the environment, levels tend to be elevated in the vicinity of metal processing operations, electroplates, gold-mining facilities, oil refineries, power plants, and solid waste combustion (Eisler, 1991).

Many chemical forms of cyanide are present in the environment, including free cyanide, metallocyanide complexes, and synthetic organocyanides, also known as nitriles. Yet only free cyanide is the primary toxic agent, regardless of origin.

All available evidence suggests that cyanide is neither mutagenic, teratogenic, nor carcinogenic. Moreover, there are no reports of cyanide biomagnification or cycling in living organisms, probably owing to its rapid detoxification. Cyanide seldom persists in surface waters and soils owing to complexation or sedimentation, microbial metabolism, and loss from volatilization (Eisler, 1991).

Higher plants are adversely affected by cyanide through cytochrome oxidase inhibition; the rate of production and release of cyanide by plants to the environment through death and decomposition is unknown. In some cases, soil bacteria and fungi produces cyanide as secondary metabolites, with adverse effects on certain plants. Several species of arthropods normally contain elevated whole-body cyanide concentrations, and these confer protection against predators and allow consumption of cyanogenic plants (Eisler, 1991).

Cyanide is less toxic to invertebrates than to vertebrates. Fish were the most sensitive aquatic organism tested. Biocidal properties of cyanide in aquatic environments were significantly modified by water, pH, temperature, and oxygen content; life stage, condition, and species assayed; previous exposure to cyanide; presence of other chemicals; and initial doses tested.

Birds that feed predominantly on flesh were more sensitive to cyanide than were herbivores.

In animals and human beings, cyanide is readily absorbed following inhalation, oral, and dermal routes of exposure. Following absorption by inhalation, cyanide is rapidly distributed by blood throughout the body. Metabolic pathways of cyanide include conversion to thiocyanate by either rhodanese or 3-mercaptopyruvate, conversion to 2-aminothiazoline-4-carboxylic acid, incorporation into a 1-carbon metabolic pool, or combining with hydroxycabalamin to form cyanocobalamin (USEPA, 1985).

Inhalation exposure to hydrogen cyanide gas can be rapidly lethal. Because of its high metabolic demands, the nervous system was the most effected by cyanide toxicity. Death from cyanide overdoses usually occurs through respiratory arrest. Inhalation and oral studies in animals have shown that cyanide exposure leads to encephalopathy in the corpus callosum, hippocampus, corpora striata, palladium, and the substantia nigra.

Additional studies have shown that cyanide induces cytotoxic damage to brain neurons via secondary effects on circulation and respiration. The most recent studies indicate that following acute cyanide exposure, disruption in neuronal calcium regulation may be an important factor in the manifestation of cyanide-induced neurotoxic events (USEPA, 1985).

A secondary effect from cyanide exposure is cardiovascular and respiratory perturbations in humans and animals. Reported symptoms included abnormal EKGs, increased blood levels of cardio-specific creatine phosphodinase, and altered cardiac and respiratory rates (USEPA, 1985).

Developmental toxicity was reported after administration of various concentrations of acetonitrile to pregnant hamsters. This study demonstrated concentration-related increases in maternal mortality, fetal resorptions, and fetal malformations consisting of exencephaly, exencephalocoele, and fused and bifurcated ribs. Studies concerning developmental effects of cyanide on humans were not available. Also, studies regarding reproductive toxicity and genotoxicity of cyanide in humans and animals were not found in the available literature (USEPA, 1985).

The EPA has classified cyanides as Group D carcinogens - not classifiable as a human carcinogen. This indicates that pertinent data regarding the carcinogenicity in humans or animals have not been located in available literature or studies (IRIS, 1993).

IRON

Iron is a silvery, white, malleable metal. It is the most abundant (by weight) of the elements that compose the earth's crust and in a major constituent in clay soils. Iron in water may be present in varying quantities dependent upon the geology of the area and other chemical components of the water body (USEPA, 1985). The bivalent and trivalent irons are the primary forms of concern in the aquatic environment. The ferrous or bivalent form can persist in waters void of dissolved oxygen and typically originate from groundwater of mines where these are pumped or drained. The ferric or trivalent form is insoluble. Iron can exist in natural organometallic or humic compounds and colloidal forms. Black or brown swamp waters may contain iron concentrations of several milligrams per liter in the presence or absence of dissolved oxygen, but this iron form has little effect on aquatic life. Iron entering water bodies is likely to partition into the bottom sediments (USEPA, 1985). Iron has relatively low mobility in soil.

There is some evidence that high concentrations of certain soluble iron salts may be teratogenic in animals. The ingestion of excess amounts of iron can irritate the gastrointestinal tract. A dose of approximately 30 grams of a soluble ferric salt is likely to be fatal in humans. Long-term inhalation exposure in an occupational setting to iron-containing dusts and fumes, especially iron oxide, can cause siderosis, a type of benign pneumoconiosis. Exposure to aerosols and mists of soluble iron salts may produce respiratory and skin irritation (USEPA, 1985).

LEAD

Lead is a characteristic trace constituent in rocks, soils, water, plants, animals, and air. Lead is used in the

manufacture of storage batteries, gasoline additives, pigment, alloys, and ammunition. Lead compounds are extremely persistent in water and soil. Natural lead compounds are not mobile in surface and groundwater because lead leached from ore is adsorbed by ferric hydroxide. Lead also readily combines with hydroxide, carbonate, and sulfate ions to form insoluble compounds. These compounds precipitate and settle in the bottom sediment. Lead is not volatile, therefore, volatilization is not an important transport process from the aquatic environment (USEPA, 1985).

In water, lead is most soluble and bioavailable under conditions of low pH; low organic content; low concentrations of suspended sediments; and low concentrations of the salts of calcium, cadmium, iron, manganese, and zinc. Lead tends to concentrate in the water surface microlayer (the upper 0.3 mm of water), especially when surface organic matter is present in thin films. However, most lead entering natural waters will precipitate to the sediment bottom as carbonates or hydroxides. Migration and speciation of lead in water are influenced by the water flow rate, increased flow rate results in increased concentrations of particulate and labile lead and a decrease in bound forms. At low stream flow, lead is rapidly removed from the water column by sedimentation (Eisler, 1988b).

Lead in sediment is mobilized and released when the pH decreases suddenly or ionic composition changes. Methylation of lead occurs in the sediments and is positively correlated to increasing temperature, reduced pH, and high microbial activities (Davis, 1994).

Sorption is a dominant effect on the distribution of lead in soil. Lead readily adsorbs to inorganic solids, organic material and hydrous iron and manganese oxides. Because of its affinity for other materials, and its solubility characteristics, the mobility of lead in soil is low (USEPA, 1985). Lead is not readily taken up by plants. Therefore, its availability to terrestrial life forms also is limited. However, excessive amounts of lead can cause growth inhabitation, as well as reduced photosynthesis, mitosis, and water absorption (Eisler, 1988b).

Lead does not appear to significantly bioaccumulated in most fish (ATSDR, 1990b). Microcosm studies show that lead is not biomagnified through the food chain (USEPA, 1985). Lead concentrations tended to decrease markedly with increasing trophic level in both detritus-based and grazing aquatic food chains. However, lead is toxic to all phyla of aquatic biota, though effects are modified significantly by various biological and abiotic conditions (Eisler, 1988b).

Lead adversely influences survival, growth, development, and metabolism of most terrestrial species. The organic forms of lead tend to be more toxic to wildlife than the inorganic lead compounds, but the inorganic forms are easily converted into organic lead forms by microorganisms (Davis, 1994).

The toxic effects of lead on aquatic and terrestrial organisms are varied and include mortality, reduced growth and reproductive output, blood chemistry alterations, lesions, and behavioral changes. However, many of the effects exhibit general trends in their toxic mechanisms. Generally, lead inhibits the formation of heme, adversely affects blood chemistry, and accumulates at hematopoietic organs (Eisler, 1988b). At high concentrations near levels causing mortality, marked changes in the central nervous system occur prior to death (Eisler, 1988b).

Lead primarily enters the body by inhalation and ingestion. The primary site of absorption by ingestion in children is the gastrointestinal tract. Fifty percent of all dietary lead ingested by children is absorbed, whereas only 8 to 15 percent is absorbed by adults. Studies have also demonstrated that trans placental transfer of lead is possible. Inorganic lead is not metabolized in the body; rather it is absorbed, distributed

and excreted. However, organic alkyl lead is metabolized in the liver via an oxidative dealkylation reaction that is catalyzed by cytochrome p-450 in animals (ATSDR, 1990b).

Lead affects various systems of the body. The endpoints elicited at low level exposure are neurobehavioral impairment, growth retardation in children, and hypertension in middle-aged men. High exposure levels produce encephalopathy, gastrointestinal effects, anemia, nephropathy, and electrocardiographic abnormalities (ATSDR, 1990b).

Lead affects the hematopoietic system by interfering with heme biosynthesis and ferrochelatase. The interference results in a reduction of the hemoglobin concentration in blood and an increase in erythrocyte destruction. The combination of these two effects produces hypochromic, normocytic anemia with associated reticulocytosis. The impairment of heme synthesis has a far ranging impact that is not limiting to the hematopoietic system (ATSDR, 1990b).

Lead exposure can also affect the central nervous system, cardiovascular system, and reproductive system. Death or irreversible health effects may occur as a result of central nervous system impairment. Common effects from high level exposure include cardiac lesions and electrocardiographic abnormalities. Hypertension has been clearly related to lead exposure. Additionally, because lead accumulates in the bones and is sporadically released into the blood, exposure prior to pregnancy may affect the fetus. Blood lead reaches the fetus by crossing through the placental barrier (ATSDR, 1990b).

The EPA has stated the "little can be concluded from available epidemiological studies" concerning the carcinogenic potential of lead (USEPA, 1990). However, the carcinogenicity of lead salts administered via injection or the oral route has been demonstrated in rats and mice in several studies. In most of the investigations, the carcinogenic response has been demonstrated only at the highest dose. Although the EPA has stated that animal data are sufficient to conclude carcinogenicity in animals, the Agency has further stated that available toxicity data on metallic lead and lead compounds are inadequate for quantitative risk assessment (IRIS, 1994).

MERCURY

Mercury is a silvery, heavy liquid. It exists as insoluble elemental mercury, organic species, and inorganic species. Mercury released to the environment will remain there indefinitely. The form that mercury exists in (organic or inorganic) may change with time. Chemical speciation is probably the most important variable influencing the ecotoxicology of mercury (Eisler, 1987b). Inorganic mercury can be methylated by microorganisms indigenous to soils, freshwater, and salt water. This process is mediated by various microbial populations under both aerobic and anaerobic conditions. Methyl mercury is the most hazardous mercury species due to its high stability, its lipid solubility, and its possession of ionic properties that create a high ability to penetrate membranes in living organisms. Methylmercury in surface waters is rapidly accumulated by aquatic organisms. The top-level predator species usually contain the highest concentrations of methyl mercury (Eisler, 1987b).

Freshwater plants exhibit a wide range of sensitivity to mercury; however, the most sensitive aquatic plant is less sensitive than the most sensitive freshwater animal. Fish tend to be more resistant to mercury than mollusks and crustaceans (Eisler, 1987b).

Mercury released into soils or surface water will exist in the mercuric state (Hg^{++}) and mercurous (H^{+}) states as a number of complex ions with varying water solubilities. Mercuric mercury, present as complexes and

chelates with ligands, is probably the most predominant form of mercury present in surface waters (ATSDR, 1989c).

Volatile forms of mercury present in surface water are expected to evaporate into the air; whereas, solid forms of mercury partition to particulates or are transported in the water column, depending on their solubility. The two most important transformation processes in the fate of mercury in surface waters are biotransformation and bioaccumulation. Photolysis of organomercurial also may occur in surface waters (ATSDR, 1989c)

Mercury released into soils may undergo the same chemical and biological transformations as mercury released into surface waters. Mercuric mercury usually forms complexes with chloride and hydroxide ions in soils. The specific compounds formed are dependent on pH, salt content, and composition of the soil solution (ATSDR, 1989c).

A number of toxic responses have been reported for mercury exposure. Eisler (1987b) reports that juvenile life stages are most susceptible to acute effects of mercury exposure. In fish, acute exposure, results in impaired respiration, sluggishness, and loss of equilibrium (Armstrong, 1979).

Mercury is a potent neurotoxin, resulting in impaired muscular coordination, weight loss, and apathy in birds, mammals, and fish (Eisler, 1987b). Other reported effects include histopathological changes, changes in enzyme activity levels, mutagenicity, teratogenicity, and reproductive impairment. Mercury, especially methylmercury, is known to concentrate in biological tissues and magnify through the food chain.

Mercury and its compounds have no known biological function. It is a mutagen, teratogen, and carcinogen, and causes embryocidal, cytochemical, and histopathological effects. Forms of mercury with relatively low toxicity can be transformed into forms of very high toxicity, such as methylmercury, through biological processes.

All mercury compounds interfere with thiol metabolism in organisms, causing inhibition or inactivation of proteins containing thiol ligands and ultimately leading to mitotic disturbances (Das et al, 1982). Mercury binds strongly with sulfhydryl groups. Phenyl-and methylmercury compounds are among the strongest known inhibitors of cell division (Birge et al., 1979). In mammals, methylmercury irreversibly destroys neurons of the central nervous system.

Early developmental stages are the most sensitive to toxic effects of mercury. Organomercury compound, especially methylmercury, are more toxic than inorganic forms. In aquatic organisms, mercury adversely affects reproduction, growth, behavior, osmoregulation and oxygen exchange. At comparatively low concentrations in birds and mammals, mercury adversely affects growth and development, behavior, motor coordination, vision, hearing, histology, and metabolism. In mammals, the fetus is the most sensitive stage (Eisler, 1987b)

NICKEL

Nickel is a naturally occurring, silvery metal that is found in the earth's crust. Nickel released into water will exist in both soluble and insoluble forms depending on the chemical and physical properties of the water. Nickel has not been shown to volatilize from the water surface. Nickel is significantly bioaccumulated in some, but not all aquatic species (ATSDR, 1988). Nickel adversely influences cell membranes with increasing water hardness (Davis, 1994)

Nickel is extremely persistent in soil; however, it still has the potential to leach through soil into groundwater. The average residence time of nickel in soil is estimated to be 2,400 to 3,500 years. The sorption of nickel into soils has found to correlate with suspension pH, total iron, and surface area. Organic complexing agents in soil tend to restrict the movement and availability of nickel in soil by forming organo-nickel complexes. Nickel is not expected to volatilize from soils (ATSDR, 1996). Nickel is not essential to plants sometimes it produces toxic effects (Davis, 1994).

The most probable exposure routes of nickel are through dermal contact, inhalation of dust, and ingestion of nickel-containing soils. The respiratory system is the primary targe of nickel exposure following inhalation. Manifestations such as inflammation of the lungs, fibrosis, macrophage hyperplasia, and increased lung weight have been noted in animals exposed to nickel. Animals exposed to nickel through oral exposure were noted to have lethargy, ataxia, irregular breathing, salvation, and squinting (ATSDR, 1996).

Teratogenic and reproductive effects of nickel in humans and animals are inadequate. However, mammalian cell transformations data suggests that specific nickel compounds are mutagenic and cause chromosomal alterations (ATSDR, 1988). Although the EPA has not assigned a carcinogen classification for soluble salts of nickel, it has assigned a Group A classification for nickel refinery dust, nickel carbonyl and nickel subsulfide. This classification indicates that there is sufficient evidence form epidemiologic studies to support a causal association between nickel exposure and cancer in humans (ATSDR, 1988).

SILVER

Silver is a naturally occurring metal. It is acquired as a by-product during the retrieval of copper, lead, zinc, and gold ores. Silver has been used for surgical protheses, splints, fungicides, and coinage. Silver is currently being used in photographic materials, electrical products, paints, and batteries (ATSDR, 1989f).

Silver in water will exist as a monovalent ion in the forms of sulfate, bicarbonate, or sulfate salts or absorbed to particulate matter. In freshwater, silver may form complex ions with chlorides, ammonium, and sulfates; form soluble organic compounds; become adsorbed onto humic complexes and suspended particulates; or become incorporated into, or adsorbed onto aquatic biota. Sorption is the primary process causing silver partitioning in sediments. The majority of silver released into water will be sorbed by manganese dioxide which is affected by pH and oxidation-reduction conditions (ATSDR, 1989f).

The transportation of silver released to soils is dependent on the drainage (silver tends to be removed from well-drained soils), oxidation-reduction potential, pH conditions, and the presence of organic matter. Silver tends to form complexes with inorganic chemicals and humic substances in soils. Silver is not likely to biotransform due to its toxicity to soil microorganisms and inhibition of bacterial biodegrative enzymes (ATSDR, 1989f).

The major forms of silver in the atmosphere include metallic silver, silver sulfide, silver sulfate, silver carbonate, and silver halides. Silver released into the atmosphere is likely to travel long distances as fine particles (ATSDR, 1989f).

VANADIUM

Vanadium is a bright, white, soft, ductile metal. Vanadium is not found native, but is found in the following ores: patronite, roscoelite, carnotite, and vanadinite (Hawley, 1987). It can also be found in foods, such as milk, seafood, cereals, and vegetables (Klaassen et al., 1986). Vanadium is used as the target material for x-

rays, in the manufacture of alloy steels, and as a catalyst for sulfuric acid and synthetic rubber (Hawley, 1987).

Vanadium released into surface water can be transported depending on the chemical species present and by environmental factors determining its solubility and binding to organic materials (Hawley, 1987)

Vanadium is moderately absorbed by human adipose tissue. Parenteral administration increases levels in the liver and kidney in animals, but these amounts may only be transient. Vanadium can also be found in lung tissue if it is inhaled, but other organs contain negligible amounts (Klaassen, 1987).

Vanadium has not produced carcinogenic, metagenic, teratogenic, or reproductive effects in humans or animals. However, industrial exposure to airborne vanadium compounds can cause eye and skin irritation. Also, gastrointestinal distress, nausea, vomiting, abdominal pain, cardiac palpitation, tremor, nervous depression, and kidney damage have been linked with industrial exposure (Klaassen, 1987).

ZINC

Zinc is a bluish, white metal that is essential for normal growth and reproduction in plants and animals and is regulated by metallothioneins. Metallothioneins act as temporary zinc storage sites and aid in reducing the toxicity of zinc to both vertebrates and invertebrates (Olsson et al., 1989).

Zinc released into surface water does not volatilize, but primarily settles into the bottom sediments. Zinc can be present in water as either suspended or dissolved compounds. Dissolved zinc may occur as the free (hydrated) zinc ion or as dissolved complexes and compounds with varying degrees of stability. Suspended (undissolved) zinc may be dissolved following minor changes in the water chemistry or may be sorbed to suspended matter. The sorption of zinc is affected by the nature of the zinc, the concentrations of the zinc, the pH, and the salinity of the water. Zinc tends to be more absorbed at higher pH concentration (>7). Desorption of zinc from sediments occurs as salinity increases (ATSDR, 1989e).

Sorption of zinc is the dominant fate of zinc in the aquatic environment. Zinc partitions to sediments or suspended solids in surface water via sorption onto hydrous iron and manganese oxides, clay minerals, and organic matter. Transport of zinc in the aquatic environment is dependent upon the composition of suspended and bed sediments. Dissolved and particulate iron and manganese concentrations, pH, salinity, concentrations of complexing ligands, and the concentration of zinc affect the transport of zinc (Eisler, 1993). In freshwater, zinc is the most soluble at low pH and low alkalinity concentrations. In natural waters, two reactions can occur: the competition for complexation sites between metal ions, and the competition between different ligands for the same metal ion (ATSDR, 1989e).

Zinc is actively accumulated in aquatic systems. However, biota appear to represent a minor sink for zinc compared with the sediments (ATSDR, 1989e). Zinc bioavailability and toxicity to aquatic organisms are highest under conditions of low pH, low alkalinity, low dissolved oxygen, and elevated temperatures. Soluble species of zinc are the most bioavailable and most toxic (Eisler, 1993).

Zinc released onto soil is likely to be strongly absorbed. The mobility of zinc in soil is dependent upon the solubility of the speciated forms of the compound and on the soil properties (sorption potential, pH, salinity; anaerobic). Little land-disposed zinc is in a soluble form; therefore, mobility is limited by a slow dissolution. Consequently, zinc is not likely to migrate into groundwater (ATSDR, 1989e).

Zinc has its primary metabolic effect on zinc-dependent enzymes that regulate the biosyntheses and catabolic rate of RNA and DNA. High levels of zinc induce copper deficiency and interfere with the metabolism of calcium and iron (Goyer, 1986). The pancreas and bone appear to be the primary targets of zinc toxicity in birds and mammals. Pancreatic effects include cytoplasmic vacuolation, cellular atrophy, and cell death (Lu and Combs, 1988). Zinc preferentially accumulates in bone, and induces osteomalacia (softening of the bone caused by a deficiency of calcium, phosphorus, and other minerals (Kaji et al., 1988). Gill epithelium is the primary target site in fish. Zinc toxicosis results in destruction of gill epithelium and tissue hypoxia (Spear, 1981).

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APPENDIX L.2
USE OF BACKGROUND CONCENTRATIONS AND SCREENING LEVELS

L.2 - USE OF BACKGROUND CONCENTRATIONS AND SCREENING LEVELS

Comparison to Background Concentrations

Background media upper confidence levels (UCLs) were presented on the tables in Section 7. A background investigation was conducted for Naval Weapons Station Yorktown, Yorktown, Virginia (WPNSTA) (Baker, 1995). The background data is presented in the Summary of Background Constituent Concentrations and Characterization of the Biotic Community from the York River Drainage Basin, Naval Weapons Station, Yorktown, Virginia (Baker, 1995). Background surface water, sediment, and biota were collected off-station in tidal freshwater habitats similar to the study sites. The tidal freshwater streams selected for background were Timberneck Creek and Taskinas Creek. Both background creeks are recognized as by the National Estuarine Research Reserve Program as good control sites for the area. Surface water, sediment and benthic macroinvertebrate samples were collected from eleven tidal freshwater sampling stations located within the streams.

Background sediment UCLs calculated for the two tidal freshwater streams were used to compare to the range of detections within the drainage channel to Indian Field Creek. Background surface soil UCLs calculated from the background anthropogenic railroad study were used to compare to the range of detections at Sites 11 and 17.

Comparison to Screening Levels

The Biological Technical Assistance Group (BTAG) Screening Levels (BSLs) developed by USEPA Region III (1995a) were the primary source of surface soil, surface water, and sediment screening levels used in this ecological RA. Secondary soil screening levels were obtained from the Oak Ridge National Laboratory (ORNL) (Will and Suter, 1994a,b; Will and Suter, 1995a,b; Talmage, 1996; and Talmage and Opresko, 1996a,b,c). ORNL has developed soil benchmark values used to evaluate potential ecological risks to terrestrial flora and fauna.

Secondary sources of screening levels for surface water were obtained from the Commonwealth of Virginia's Water Quality Standards for surface water (VSWCB, 1992), the USEPA Ambient Water Quality Criteria (USEPA, 1991 and 1992b), and secondary water quality criteria established by the Oak Ridge National Laboratory (ORNL) (1996).

The surface water screening levels are non-enforceable regulatory guidelines and are of primary utility in assessing the acute and chronic toxic effects in aquatic systems. The surface water screening levels are provided for both freshwater and marine aquatic systems, and are reported as acute and/or chronic values (USEPA, 1995a). In addition, the USEPA has promulgated Water Quality Standards (WQS) for states that have not developed their own standards. These WQS are based primarily on the USEPA Ambient Water Quality Criteria, with some of the values updated with more recent information. In addition, Virginia Water Quality Standards (Surface Water) also were used. These water quality standards are the concentrations of toxic substances that will not result in chronic and acute toxicity to aquatic life (VSWCB, 1992). Virginia WQS and USEPA criteria were used for contaminants that did not have BSLs.

Secondary sources of screening levels for the sediment were obtained from: Long et al. (1995); Long and Morgan (1991); Apparent Effect Threshold (AET) values (TetraTech, 1986) (PTI, 1989); the Wisconsin Department of Natural Resources interim guidance criteria for in-water disposal of dredged sediment (Sullivan et al., 1985); secondary screening levels developed by ORNL (1996); and Ontario sediment guidelines (Ministry of Environment and Energy, 1993). The detected concentrations compared with Long et al. (1995) or Long and Morgan (1990) values were compared with effects range-low (ER-L) and effects range-median (ER-M) values. The ER-L value represents potential for chemical contaminants in sediment to cause adverse biological effects (Long et al., 1995; Long and Morgan, 1991; and USEPA, 1995). The lower ten percentile (ER-L) and the median percentile (ER-M) of biological effects have been developed for various contaminants. Concentrations detected below the ER-L represent a minimal-effects range (adverse effects would be rarely observed). The concentration above the ER-L, but below the ER-M represents a possible-effects range (adverse effects would occasionally occur). Finally, the concentration above the ER-M represents a probable-effects range (adverse effects would probably occur) (Long et al., 1995).

In addition to ER-L and ER-Ms, AET sediment quality values have been developed for the Puget Sound (Tetra Tech, Inc., 1986). AETs are the concentrations of contaminants above which statistically significant biological effects always would be expected. Finally, the Wisconsin Department of Natural Resources has developed interim criteria for in-water disposal of dredged sediment (Sullivan et al., 1985). However, these criteria were established using background concentration data and were not based on toxicity data.

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APPENDIX L.3
TOXICITY BENCHMARK VALUES

L.3 - SITES 11 AND 17- TOXICITY BENCHMARK VALUES

SEMIVOLATILE ORGANIC COMPOUNDS

Bis(2-ethylhexyl)phthalate (surface soil)

Studies were not available to determine the effects of bis(2-ethylhexyl)phthalate in surface soil invertebrates. Therefore, the risk to the terrestrial environment from bis(2-ethylhexyl)phthalate was not determined in this assessment.

Dibenzofuran (surface soil)

Studies were not available to determine the effects of dibenzofuran in surface soil invertebrates. Therefore, the risk to the terrestrial environment from dibenzofuran was not determined in this assessment.

PAHs (surface soil)

The USEPA reported forestomach tumors in 100 percent of female mice fed 1,000 mg/kg BW/day of PAHs for 29 weeks. Rigdon (1967) conducted a feeding test on CFW mice. The endpoint 8in the test was forestomach tumors. Mice, in nine treatment groups, were fed between 0.13 mg/kg BW/day and 32.5 mg/kg BW/day for 110 days. The highest dose produced tumors in 90 percent of the mice. The NOAEL was determined to be 1.3 mg/kg BW/day and a LOAEL of 2.6 mg/kg BW/day (4 percent occurrence of tumors).

Based on these studies, 2.6 mg/kg BW/day LOAEL and 1.3 mg/kg BW/day NOAEL were used in the shrew, fox, mouse, and vole models.

Trust et al. (1993) conducted studies on adult and nesting European starlings. Nesting birds (9 days old) were gavaged with corn oil containing 7,12-dimethylbenz(a)anthracene at total doses of 0, 10, and 100 mg/kg BW/day (five equal doses of 0, 2, 20 mg/kg BW/day over five days). Nesting birds showed no adverse effects at 0 and 10 mg/kg Bw/day. However, 100 mg/kg BW/day resulted in 11 percent reduction in mean body weight, a 16 percent reduction in mean hemoglobin concentrations, and a 90 percent reduction in lymphocyte proliferation (as measured via a stimulation index). Adult starlings dosed as high as 300 mg/kg BW/day showed no adverse effects.

Based on the above-mention study, 100 mg/kg BW/day was used for a LOAEL and 10 mg/kg BW/day was used for a NOAEL in the robin, woodcock, wren, and hawk models for this ecological RA.

NITRAMINES

amino-Dinitrotoluene (surface soil)

A surface soil benchmark value of 80,000 µg/kg is based on a nutsedge study (Pennington, 1988) conducted for 42 days in clay/silt soil amended with 80,000 µg/kg of 2-amino-4,6-DNT/g of soil. No significant differences in yield, as measured by plant weight, between controls and treatments within soil types were observed. In addition, in this Pennington study, no toxic effects were observed to soil microorganisms in soil applied with 80,000 µg/kg.

Information on plant uptake is conflicting: 2,4-amino-4,6-DNT was not adsorbed by yellow nutsedge when

added to soil, but was present throughout the plant when the plants were grown in a solution of TNT. Because metabolites were not present in solution, it was concluded that metabolism of TNT took place following adsorption; 2-amino-4,6-dinitrotoluene was found throughout the plant, but primarily in the roots. No phytotoxic effects were reported when yellow nutsedge was grown in soil amended with 80,000 µg/kg of the test compound. No studies are available on soil invertebrates or soil heterotrophic processes although microbial transformation took place when soil was amended with 80,000 µg/kg.

A surface soil NOAEL of 80,000 µg/kg was used in this ecological RA to assess impact to surface soil flora and fauna.

A NOAEL value of 1.76 mg/kg/day was used in the vole and shrew models. This NOAEL was developed from oral LD_{50} values developed by Ellis et al. (1980). In a study conducted with 4-amino-2,6-dinitrotoluene on male and female mice, a male mouse oral LD_{50} between 1,141 and 1,161 mg/kg was developed. The NOAEL value for the vole and shrew were developed by multiplying the LD_{50} value of 1,141 by a feeding rate and dividing by body weight.

A single oral dose of 4-ADT was readily absorbed and eliminated by albino rats (Ellis et al., 1980). The exact dosages and sex of the rats are not reported. The female and male rats received 95 and 136 mg/kg of TNT, respectively.

No values for the catfish, frog, robin, heron, and hawk were found. Therefore, amino-dinitrotoluene was not assessed in the catfish, frog, robin, heron, or hawk models.

2,4,6-Trinitrotoluene (surface soil)

In a single study, growth of yellow nutsedge was reduced at the lowest solution concentration tested, 5 mg/L. The nutsedge was grown in pots containing either Tunica silt or Sharkey clay soils and 0.08 mg/kg of TNT (Pennington, 1988). Forty-five days after planting, the plant yields (g, dry weight) of the treated plants from the two soils were higher than the yield of respective control plants, but the differences were not statistically significant. No effects on the growth of yellow nutsedge were reported at a soil concentration of 80,000 µg/kg TNT in one study, but a second study reported phytotoxic effects at 30,000 µg/kg.

Bean, wheat, and blando broom were grown in posts amended with TNT at concentrations of 10, 30, and 60 ppm (Cataldo et al., 1989). Two soils were tested, Palouse (1.7 percent organic matter) and Cinebar (7.2 percent) organic matter. Plant height was reduced by > 50 percent in all species in both soils at the 60 ppm concentrations and a reduction of 25 percent occurred in the wheat and grass at the 30 ppm concentration. Marked chlorosis and tip burns were also observed at the 60 ppm concentrations.

A no-effect level of 100,000 µg/kg TNT and an LOEC of 200,000 µg/kg were reported for numbers of soil nematodes and microarthropods. An LOEC for weight loss in earthworms was reported at 140,000 µg/kg. These toxicity values have low levels of confidence associated with them because all the values are based on one or two studies.

A NOAEL of 3,000 µg/kg (30,000 divided by 10) was used to assess surface soil concentrations of TNT.

The following values were used in the terrestrial models calculated for Sites 9 and 19:

Short-tailed shrew NOAEL - 3.4 mg/kg/day (value used for shrew)
White-footed mouse NOAEL - 3.0 mg/kg/day (value used for hawk and robin)
Meadow vole NOAEL - 2.6 mg/kg/day (value used for vole)
Mink NOAEL - 1.2 mg/kg/day (value used for heron and frog)

No value for catfish was found; therefore, TNT effects to the catfish were not determined in this ecological RA.

Few data on the toxicity of TNT to terrestrial animals and plants were located in the available literature. Studies with laboratory animals were used to calculate screening benchmarks for mammalian wildlife. Using a reproductive endpoint, a NOAEL value of 1.6 mg/kg/day from a feeding study with the laboratory rat was used to calculate valued for food and water intake for the short-tailed shrew, white-footed mouse, meadow vole, cottontail rabbit, mink, red fox, and white-tail deer.

The study by Dilley et al. (1982) in which Sprague-Dawley rats were administered TNT in the diet at doses of 0, 1.4, 6.97, 34.7, or 160 mg/kg/day for 13 weeks was chosen to derive screening benchmarks for representative wildlife. A NOAEL of 1.6 mg/kg/day was calculated from a subchronic LOAEL of 160 mg/kg/day with the endpoint being effects on the reproductive system.

INORGANIC COMPOUNDS

Aluminum (surface soil and sediment)

No NOAEL values could be found for sediment organisms.

One study was conducted (Mackay et al., 1990) on the seedling establishment of white clover in silt loam soil (pH of 5.0) was reduced 30 percent by the addition of 50 mg/kg of aluminum (as aluminum sulfate). A toxicity benchmark value of 50 mg/kg of aluminum was used for comparison in this ecological RA. It is noted that this plant benchmark value has a low degree of confidence because the value of 50 mg/kg is based on one study for one species of plant.

Effects of aluminum (as $ALCL_3$) on arylsulfatase activity were evaluated by Al-Khafaji and Tabatabai (1979). Soils were chosen with a range in pH (6.2 to 7.6 SU), organic matter (5.6 to 10.6 percent), and clay contents (26 to 34 percent). Air-dried, sieved soil samples were placed in flasks with the test chemical added in solutions. The samples were incubated for 90 minutes before microbial activity was stopped and arylsulfatase activity measured. In all of the soils, a concentration of 675 mg/kg aluminum reduced the enzyme activity between 24 and 43 percent. The least inhibition occurred in the soil with the highest concentrations of organic matter and clay.

A similar study conducted (Juma and Tabatabai, 1977) using the same system and three of the same soils to evaluate the effects of several inorganics on soil acid and alkaline phosphatase activities. Three soils were used to test effects and acid phosphatase activity with ranging pH (5.8 to 7.8 SU), organic matter (5.2 to 11 percent), and clay content (23 to 30 percent). Alkaline phosphatase activity was not tested in the most acidic soil. For aluminum in a loam soil (pH 5.8; percent organic matter 5.2), acid phosphatase activity was reduced, and alkaline phosphatase activity was reduced in another loam soil (pH 7.4, percent organic matter 11) by a concentration of 675 mg/kg aluminum. Aluminum did not affect the activity of either enzyme in an alkaline soil (pH 7.8, percent organic matter 7.4).

The benchmark value of 600 mg/kg aluminum was derived from the two above studies for microbe activity. The confidence level in this value is low because of the limited amount of data available.

In a study performed by Ondreicka et al. 1966, a mouse, weighing 0.03 kg, was fed aluminum chloride over three generations (>1 a year and during a critical life stage which would be considered a chronic effect). The mouse was fed aluminum chloride at one dose level, 19.3 mg AL/kg/d, in water. The endpoint studied was reproduction. While there were no effects on the number of litters or number of offspring per litter, growth of generations 2 and 3 were significantly reduced. Therefore, this dose was considered a chronic LOAEL. A chronic NOAEL was estimated by multiplying the chronic LOAEL by a LOAEL-NOAEL uncertainty factor of 0.1. Therefore, the final LOAEL is 19.3 mg/kg/day and the final NOAEL is 1.93 mg/kg/day.

In a study performed by Carriere et al., 1986, a ring dove, weighing 0.155 kg, was fed aluminum sulfate over a four month period (>10 wk. and during a critical life stage which would be considered a chronic effect). The mouse was fed aluminum sulfate at one dose level, 1,000 ppm, in its diet. The endpoint studied was reproduction. Because no significant differences were observed at the 1,000 ppm dose level and the study considered exposure over 4 months including critical life stages (reproduction), this dose was considered a chronic NOAEL. The final NOAEL of 109.7 mg/kg/day was calculated using the dove's feeding rate (17 g food/day) and body weight (0.155 kg).

For the terrestrial models in this report, the NOAEL developed from the ring dove of 109.7 mg/kg/day was used in the robin, heron, woodcock, wren, and hawk models. The mouse NOAEL of 1.93 mg/kg/day was used in the vole, shrew, fox, and mouse models. The mouse LOAEL of 19.3 mg/kg/day (produced chronic reproductive effects) also was used in the vole and shrew model. No values for the bass and frog were found; therefore, aluminum was not evaluated in these models.

Antimony (surface soil)

No primary reference data for antimony effects to soil flora and fauna could be located. A study conducted by Kabata-Pendias and Pendias (1984) determined unspecified toxic effects on plants grown in surface soil with the addition of 5 ppm of antimony. A benchmark value of 5 ppm was used for this ecological risk assessment. However, there is low confidence in this benchmark value because it is based on one study.

An antimony NOAEL was developed in a rat study conducted by Schroeder et al. (1976). This NOAEL was used in the vole, mouse, fox, and shrew model to assess potential impacts from surface soil concentrations of antimony.

Beryllium (surface soil)

In a study conducted Kabata-Pendias and Pendias (1984), beryllium at a concentration of 10 ppm was found to produce unspecified toxic effects on plant growth. For this assessment, 10 ppm was used to assess surface soil concentrations of beryllium. However, the confidence in this benchmark value is low because it is based on a report with unspecified effects.

A rat NOAEL of 0.54 mg/kg/day was developed from a study (Schroeder and Mitchener, 1975) on the chronic systemic effects of beryllium on rats. This NOAEL was used in vole, fox, mouse, and shrew models. No NOAELs were found for the robin, woodcock, wren, and hawk; therefore, beryllium was not assessed in these models.

Chromium (surface soil)

Turner and Rust (1971) investigated the effect of chromium (VI) on soybean seedlings grown for 3 days in a loam soil. Fresh shoot weight was reduced 30 percent with 30 ppm of chromium, while 10 ppm showed no effects. Adema and Henzen (1989) calculated an EC_{50} concentration for effects of chromium (VI) when added on lettuce tomato, and oats grown in a growth chamber from seed for 14 days. The EC_{50} for lettuce in humic sand soil (pH 5.1 SU and 3.7 percent organic matter) was greater than 11 ppm, while in a loam soil (pH 7.4 SU and 1.4 percent organic matter) it was 1.8 ppm of chromium. The EC_{50} for the tomato in humic sand soil was 21 ppm, while in the loam soil it was 6.8 ppm of chromium. The EC_{50} for the oats in the humic sand soil was 31 ppm, while in the loam soil it was 7.4 ppm of chromium. A benchmark of 1 ppm was established from these studies. The confidence is low in this number because of the small number of studies.

Earthworms demonstrated increased levels of mortality and a mixed response in reproduction with increasing levels of chromium in soil. A study conducted (Abbasi and Soni, 1983) exposed earthworms to 2.0, 10.0, and 20.0 ppm of Chromium (VI) in soil for 60 days resulting in 25, 25, and 70 percent mortality. A 60-day LC_{50} was reported ad 15.14 ppm. For this risk assessment, a NOAEL of 0.15 ppm was used (dividing the LC_{50} by 100).

In the reproduction portion of the study, the number of juveniles found (per 60 individuals) in the treatment soil containing 20 mg/kg of chromium was the same as the number of juveniles found in the control soil. However, the number of earthworm segments found in the 20 mg/kg chromium soil were 67 percent higher than in the control treatment soil. In contrast, the number of cocoons in the 20 mg/kg soil was 60 percent lower than in the control soil. It was not stated whether the chromium concentrations were reported as dry or weight (Abbasi and Soni, 1983).

An investigation conducted by Steven et al. (1976) determined 2.5 mg/kg/day of chromium (VI) ingestion by dogs caused death. For this ecological RA, 0.025 mg/kg/day was used as a NOAEL (developed from dividing 2.5 mg/kg/day by 100) in the vole, shrew, fox, and mouse models.

A study conducted by Heinz and Haseltine (1981) exposed 2- to 3-year old breeding pairs of black ducks (*Anas rubripes*) to a diet containing 0, 20, or 200 mg/kg, wet weight, (0, 2.77, or 27.77 mg/kg BW/day) of chromium (III) as chromium potassium sulfate for a period of 5 months, until the onset of egg-laying by the female ducks. Hatched ducklings were fed a mash diet of the chromium concentrations that the parents were fed. Seven-day-old ducklings were tested for avoidance behavior in response to fright stimuli. None of the chromium concentrations resulted in alteration of avoidance behavior.

In an unpublished report to Eisler (1986a), Haseltine et al. (1985) noted that black duck ducklings suffered reduced survival and altered growth patterns when exposed to 10 mg/kg and 50 mg/kg of an unspecified chromium (III) compound in their diets. The percent reduction of the ducklings and details on the study were not made available.

For this ecological RA, a dietary level of 10 mg/kg (1 mg/kg BW/day) of chromium in prey was used as a LOAEL for avian species. However, due to the conflicting results of the two Haseltine studies, a NOAEL was derived from the same study in which the LOAEL was selected to maintain consistency with regards to chromium species evaluated. A NOAEL of 0.1 mg/kg BW/day was derived from the LOAEL.

Cobalt (sediment)

No sediment benchmark values were found for cobalt.

A mineral tolerance level of 10 mg/kg/day of cobalt produced subchronic effects for cattle, chronic effects for poultry, and chronic effects for the rabbit. Therefore, a NOAEL of 1 mg/kg/day was used in the heron model. No values were found for the bass and frog models. Therefore, cobalt was not assessed in the bass and frog models.

Copper (surface soil)

A study conducted by Miles and Parker (1979b) found approximately 68 percent reductions in root and shoot weights of little bluestem grown from seed when 100 ppm of copper was added. The study was conducted for 12 weeks in a sandy soil (pH 7.8 SU, 2.5 percent organic matter, clay content 12 meq/100g soil). Growth was reduced in a second sandy soil (pH 4.8 S.U., 1.9 percent organic matter, clay content 6 meq/100g soil) by 86 percent with the addition of 100 ppm of copper.

Wallace et al. (1977a) evaluated the effects of copper by adding copper sulfate to a loam soil containing bush beans. The growth study was conducted for 17 days. The leaf weight was reduced 26% by 200 ppm copper, while the 100 ppm produced no effects.

A plant benchmark toxicity value of 100 ppm of copper was established from the above studies. The confidence in this benchmark is low because it was derived from only a few studies.

Studies conducted by Premi and Cornfield (1969, 1969/1970) determined the effects of several metals added to a sandy loam soil on nitrogen transformations by native soil microflora. In a 21-day experiment (1969), nitrification was severely inhibited at 10,000 ppm copper, added as copper sulfate, but unaffected at 1,000 ppm. Copper added in carbonate form was ineffective at 10,000 ppm (highest concentration tested), probably from the increase in soil pH caused by addition of this form. In an 8-week experiment (1969/1970) with sucrose and ammonium nitrate added to the soil, nitrification was decreased at 1,000 ppm of copper, but unaffected by 100 ppm of copper.

Effects of copper on arylsulfatase activity were evaluated by Al-Khafaji and Tabatabai (1979). Soils were chosen with a range in pH (6.2 to 7.6 SU), organic matter (5.6 to 10.6 percent), and clay contents (26 to 34 percent). Air-dried, sieved soil samples were placed in flasks with the test chemical added in solutions. The samples were incubated for 90 minutes before microbial activity was stopped and arylsulfatase activity measured. In the soil with the highest pH (7.6 SU), copper had no effect. Arylsulfatase activity in the other three soils was reduced by copper at a concentration of 1,590 ppm. Reductions were the least severe in the soil with the highest organic carbon and clay content.

A study conducted (Juma and Tabatabai, 1977) using the same system and three of the same soils to evaluate the effects of several inorganics on soil acid and alkaline phosphatase activities. Three soils were used to test effects and acid phosphatase activity with ranging pH (5.8 to 7.8 SU), organic matter (5.2 to 11 percent), and clay content (23 to 30 percent). Acid phosphatase activity was affected by copper (I) and copper (II) in all three soils about equally at a concentration of 1,590 ppm of copper (lowest concentration tested). The greatest reduction occurred in the soil with the lowest pH and the lowest contents of organic matter and clay. Alkaline phosphatase was more sensitive to copper (I) than copper (II).

The effects of copper (as copper chloride) on carbon and nitrogen mineralization and nitrogen transformations in alfalfa-amended sieved soil were determined by Suter and Sharples (1984). The silt loam

soil had a pH of 4.7 SU. At 10 days, respiration was reduced by 24% at 100 ppm, but significant reductions occurred at 500 ppm on days 3 and 14 and at 1,000 ppm on all dates.

The benchmark for copper has been established at 100 ppm for soil microorganisms and processes. Confidence in this benchmark is high.

Streit and Jaggy (1983) have determined that the organic carbon content of the soil is a strong determinant of the bioavailability and toxicity of copper. Low pH has a compounding effect, with an increase in copper availability resulting from more acid conditions. Overall, reproduction is more sensitive than mortality, and there in no consistent evidence that one genus of earthworms is any less tolerant to copper under a given set of conditions that another genus.

A study conducted by Neuhauser et al. (1984) evaluated the effects of soluble forms of copper on growth and reproduction of earthworms. The six-week study concluded that both growth (weight) and cocoon production were decreased (75 to 85 percent) by 2,000 ppm of copper, while 1,000 ppm had no effect. A Neuhauser et al. (1985) used the OECD artificial soil (pH 6) to estimate LC_{50} of copper (as copper nitrate) for adult earthworms. After 14 days, the LC_{50} was 643 ppm.

Spurgeon et al. (1994) kept adult earthworms in contaminated OECD artificial soil (pH 6.3) for 8 weeks to test the effects of copper (as copper nitrate) on survival and growth of the worms. After 56 days, the calculated LC_{50} was 555 ppm and the EC_{50} for cocoon production was 53.3 ppm.

A benchmark value for earthworms was calculated at 50 ppm. Confidence in this benchmark is moderate.

The benchmark of 50 ppm of copper was used in this risk assessment to evaluate surface soil concentrations.

One study (OHMD, 1987) conducted showed that an oral dose of 100 mg/kg/day fed to a dog caused death. For this report, a NOAEL value of 1 mg/kg/day (100mg/kg/day divided by 10) was used in the vole and shrew models.

A dose of 350 mg/kg (61.3 mg/kg/day) caused a significant decrease in the growth and consumption by chickens (Smith, 1969). Another study on chickens, found a dose of 326 mg/kg (23.5 mg/kg/day) caused respiratory problems (Hatch, 1978). Assuming that respiratory problems are acute effects, a NOAEL (23.5 mg/kg/day divided by 100) of 0.235 mg/kg/day was developed for the robin, heron, and hawk models (Hatch, 1978).

No LOAEL or NOAEL values for found for the catfish and frog; therefore, copper was not assessed in these models.

Cyanide (surface soil)

There were no toxicity values found for the impacts of cyanide to surface soil flora and fauna. Therefore, cyanide impacts on flora and fauna was not assessed in this ecological RA.

A NOAEL for the rat of 0.8 mg/kg/day (Gerhart, 1987) was used in the vole, fox, mouse, and shrew models. A poultry NOAEL of 4.5 mg/kg/day (Gomez et al., 1983, 1988) was used in the robin, woodcock, wren, and hawk models.

Respiratory effects were observed in animals exposed to cyanide. Labored respiration occurred in rats exposed at a dose of 0.8 mg CN/kg/day when administered in a form of potassium silver cyanide for 90 days (Gerhart, 1987).

Increased resorptions were reported in rats fed a diet containing 80% cassava powder during festation (Singh, 1981). No reproductive effects were found in a group fed with 50% cassava powder. Furthermore, no changes were observed in many implantations and resorptions in hamsters exposed to cyanide in a cassava diet that provided 11.9 mg CN/kg/day (Frakes et al, 1986). Increased gonadal weight was observed in male rats exposed to 14.5 mg CN/kg/day as copper cyanide (Gerhart, 1986) or 2.6 mg CN/kg/day as potassium silver cyanide (Gerhart, 1987). The NOAEL values were 4.35 mg CN/kg/day (Gerhart, 1986) and 0.8 mg CN/kg/day (Gerhart, 1987), respectively. No effects were observed in female rats in either study.

Iron (surface soil)

A soil benchmark value of 280 ppm was developed by Liang and Tabatabai (1977) in an investigation on the effects of iron on nitrogen mineralization by native soil microflora in four soils varying in pH (6.0 to 7.8 SU), clay content (23 to 34 percent), and organic matter content (6 to 11 percent). Only one concentration was tested and added to the soil as a salt solution.

The influence of soil characteristics on iron (III) arylsulfatase activity was evaluated by Al-Khafaji and Tabatabai (1979). The effects of soil characteristics on effects of iron. Soils were chosen with a range in pH (6.2 to 7.6 SU), organic matter (5.6 to 10.6 percent), and clay contents (26 to 34 percent). Air-dried, sieved soil samples were placed in flacks with the test chemical added in solutions. The samples were incubated for 90 minutes before microbial activity was stopped and arylsulfatase activity measured. In all of the soils, activity was reduced at 1,398 ppm of iron. The magnitude of reduction generally was inversely related to the soil pH.

A similar study was conducted (Juma and Tabatabai, 1977) using the same system and three of the same soils to evaluate the effects of several inorganics on soil acid and alkaline phosphatase activities. Three soils were used to test effects and acid phosphatase activity with ranging pH (5.8 to 7.8 SU), organic matter (5.2 to 11 percent), and clay content (23 to 30 percent). Alkaline phosphatase activity was not tested in the most acidic soil. Iron (II) reduced acid phosphatase activity at 1,398 ppm in only the soil with the lowest pH, organic matter, and clay content. Iron (III) reduced activity to a greater degree in this soil and in the soil with the second lowest pH (but highest organic matter and clay contents). Iron (II) inhibited alkaline phosphatase activity in one of the soils tested and iron (III) in the soil in which both forms of iron inhibited aced phosphatase activity.

The effective concentration of 280 ppm (Liang and Tabatabai, 1977) is the lowest of the nine values reported. The selected benchmark of 200 ppm has a low confidence level because of the limited amount and type of data available.

A mineral tolerance level of 1,000 mg/kg/day produced subchronic effects for cattle and chronic effects for poultry. This value was used as the LOAEL and to develop the NOAEL in the robin, heron, wren, woodcock, and hawk terrestrial models. A mineral tolerance level of 500 mg/kg/day produced chronic effects for the rabbit. The value of 500 mg/kg/day was used as the LOAEL in the vole, shrew, fox and mouse models and to develop the NOAEL for these models. No values were found for the bass and frog models; therefore, iron was not assessed in these models.

Pigs are more tolerant of excess iron than cattle, sheep, or poultry. Based on available information, the maximum tolerable levels of dietary iron are 3,000 ppm for swine and 1,000 ppm for cattle and poultry. The more limited data available for sheep suggest a maximum tolerable level of 500 ppm dietary iron. The values listed above assume that the biological availability of the dietary iron is high. All species can probably tolerate much higher levels when the iron is supplied from sources with low bioavailability.

Lead (surface soil)

A study conducted by Rolfe and Bazzaz (1975) calculated the effects of lead (as lead chloride), added to a 1:1:1 mixture of soil, sand, and peat moss on a 1-year-old seedling of autumn olive grown for 49-days. The study found a reduction in transpiration of approximately 25 percent with the addition of 160 ppm of lead, while 80 ppm produced no effects.

Burton et al. (1984) grew Sitka-spruce seedlings from 4 weeks of age in a mixture of acidic peaty gley soil and sand with lead added as lead chloride. Lead added at 100 ppm resulted in a reduction of about 25% in root and shoot weight of the 18-week-old seedling.

A study conducted by Muramoto et al. (1990) measured the effects of lead (as PbO) to an alluvial soil (pH 6) on growth and yield of wheat grown from seed to maturity. Root weight was reduced by 22 percent by 1,000 ppm of lead, while 300 ppm had no effect.

Corn grown from seed in a 31-day study in a loamy sand (Miller et al., 1977) experienced 42 percent decreases in plant weight after 250 ppm of lead was added. Lead at 125 ppm did not affect growth.

Based on these studies presented above and other studies, a flora benchmark value of 50 ppm was established. This benchmark has a moderate level of confidence associated with its accuracy.

A study conducted by Bengtsson et al. (1986) examined the effects of lead on the earthworm at different acidities. The metal was added to a 1:2 (volume) combination of sandy soil and well-composed cow manure with a resulting organic content of about 6 percent. After 4 month at pH 4.5, the number of cocoons produced per worm, hatchlings, and percent hatched cocoons were reduced 75, 100, and 100 percent, respectively by 500 ppm of lead, while 100 ppm had no effect. At pH 5.5 and 6.5, lead had no effect at any level on any of the measures.

A benchmark value of 500 ppm of lead was developed from the Bengtsson study. The confidence in this level is low because of the limited about of data.

Khan and Frankland (1984) used a dyed cellophane film technique to evaluate the effects of lead on cellulolytic activity of native soil microflora in a Brown earth soil (pH4.6). A 23 percent reduction in cellulose decomposition was measured in the 1,000 ppm lead soils, while 500 ppm showed no effects.

The mediating influence of clay on effects of lead on soil respiration was study by Debosz et al. (1985). The sandy loam soil (9 percent clay) was amended with glucose and lead acetate in solution. After 15 days, respiration was reduced 29 percent by 10,000 ppm of lead (1,000 ppm had no effect). In the same soil amended with either 9 percent by weight kaolinite or montmorillonite, lead up to 10,000 ppm had no effect.

A benchmark value of 900 mg/kg lead was developed for the protection of microorganisms. The confidence in this benchmark is high because of the large amount of data available.

For this ecological RA, a soil benchmark value of 50 ppm was used to assess lead concentrations impact on soil flora and fauna.

No value for largemouth bass and frog were found; therefore, lead was not evaluated in these models.

In a single dose study (Lawler et al., 1991), the gastric motility of adult male and female red-tailed hawks (*Buteo jamaicensis*) fed 0.82 and 1.64 mg/kg BW/day of lead was evaluated through the use of surgically implanted transducers for a period of 3 weeks. Neither concentration had any effect on the gastric contractions of egestion of undigested material pellets.

Another study conducted on red-tailed hawks (Reiser and Temple, 1981) found that 3 mg/kg/day of lead caused the clinical symptoms of lead poisoning. A similar study (Osborne et al., 1983) found that 3 mg/kg/day fed to starlings caused a reduction in muscle condition and altered their feeding activity. For this ecological RA, a value of 0.3 mg/kg/day NOAEL developed from red-tailed hawk and sterling studies was used in the heron, hawk, wren, woodcock, and robin models.

A study conducted on mice determined that 1.5 mg/kg/day of lead caused a reduction in success of implanted ova (Clark, 1979). Another study (Clark, 1979) found that 2.2 mg/kg/day of lead produced a reduction in the frequency of pregnancy when the dose was administered for 3 to 5 days. For this report, a value of 0.15 mg/kg/day was used as a NOAEL (1.5 mg/kg/day divided by 10) was used in the shrew, fox, mouse, and vole models.

Mercury (surface soil)

There are no primary reference data describing toxicity of mercury to plants grown in soil. Kabata-Pendias and Pendias (1984) report unspecified toxic effect on plants grown in a surface soil with the addition of 0.3 ppm of mercury. For this ecological RA, a NOAEL value of 0.03 (0.3 divided by 10) was used to assess surface soil concentrations of mercury. Confidence in this benchmark is low because it is based on a secondary reference.

Earthworms demonstrated increasing levels of mortality and a mixed response in reproduction with increasing levels of mercury in soil. Survival and cocoon production were reduced 65 and 40 percent (respectively) with the addition of 0.5 ppm of mercury, the lowest concentration detected. The number of juveniles was not affected.

In the reproduction portion of the study, the number of juveniles per 60 test species was 42 percent higher in the 5.0 mg/kg mercury soil than in the control soil. However, the number of earthworm segments and cocoons in the 5.0 mg/kg soil was 50 percent and 100 percent lower, respectively, than in the control soil. It was not stated whether the mercury concentrations were reported in dry or wet weight (Abbasi and Soni, 1983).

The effect of methyl mercury on survival and segment generation of earthworms was investigated by Beyer et al. (1985). Methyl mercury chloride was added to an undefined potting soil which the earthworms were cultured for 84 days. A concentration of 12.5 ppm of mercury reduced survival by 21 percent, and the ability to regenerate excised segments was reduced by 69 percent. Methyl mercury at 2.5 ppm showed no effect.

A benchmark for earthworms of 0.05 ppm was developed from the Abbasi and Soni (1983) study. A safety factor of 10 was applied to the 0.5 ppm LOEC because it caused a 65 percent reduction in survival.

Khera (1979) conducted a study on rats. A dose of 0.5 mg/kg/day of mercury caused a reduction in mice fertility. For this ecological RA, a NOAEL value of 0.05 mg/kg/day (0.5 mg/kg/day divided by 10) was used for the vole, mouse, fox, and shrew models.

Four groups of zebra finches (seed eaters) were fed a diet consisting of 0, 1.0, 2.5, and 5.0 μg/g of methyl mercury (Scheuhammer, 1988). A dietary level of 5 μg/g caused significant neurological impairment and death to the finches. No systems were observed in the group fed levels of 2.5 μg/g of methyl mercury.

A study (Nicholson and Osborn, 1984) of juvenile starlingss (*Sturnus valgaris*; omnivores) found that 1.1 mg/kg of mercury (0.12 mg/kg BW/day) produced kidney lesions.

Borg et al. (1970) conducted a study on goshawks fed a diet of chickens which had been fed methyl mercury treated wheat of 0.4 to 0.5 mg/kg BW/day for 5 to 6 weeks. All the chickens were clinically healthy at the end of the feeding period. Average mercury levels in the chicken feed was 8 mg/kg, and in skeletal muscle of the chickens was 10 mg/kg. After taking into account the water content of the food, this represents a concentration of 2 mg/kg. Muscle and liver from the chickens were fed to goshawks. The intake of mercury by the goshawks was 0.7 to 1.2 mg/kg BW/day. Clinical symptoms of mercury poisoning appeared after 2 weeks. All birds died after 47 days from the onset of the experiment. Muscle mercury levels of the goshawks averaged 40 to 50 mg/kg, representing a concentration factor of 4 to5 in the second link of the food chain. Brain mercury levels in the dead goshawks ranged from 30 to 40 mg/kg.

Fimreite and Karstad (1971) conducted a study on red-tailed hawks. The hawks were fed chicks contaminated with methyl mercury. The chicks diet contained Panogen 15, a commercial seed treatment containing 2.5 percent methyl mercury dicyandiamide (MMD) at rates of 6, 12, and 18 mg/kg MMD for three weeks. The mercury levels in the chick livers were 3.9, 7.2, and 10.0 mg/kg, respectively. Mean estimated intakes of mercury by the three groups of hawks over the 12-week exposure period was 0.575 mg of mercury per day; 1.12 mg of mercury per day; and 1.46 mg of mercury per day, respectively. Mortality occurred in the hawks receiving the most contaminated diet (1.12 mg/kg BW/day) after an exposure period of one moth or more. Pathological changes (swelling axons of myelinated nerves in the spinal cord, and dilation of myelin sheaths and loss of myelin) were noted in the hawks receiving the highest dose of mercury.

A field study (Barr, 1986) on common loons (*Gavia immer*) nesting on the Wabigoon-English River systems found that the nesting success here was depressed. A strong negative correlation was found between the successful territories by breeding loons and mercury contamination. A reduction in egg laying and nest site and territorial fidelity were associated with mean mercury contamination ranging from 0.3 to 0.4 mg/kg in prey, and from 2 to 3 mg/kg in adult brain tissue and eggs. Loons established few territories, laid only one egg, and raised no young where mean mercury in the prey species exceeded 0.4 mg/kg. Other potential toxins were found loons and prey items at low levels, and were discounted as a major factor in the failure of loon reproduction.

For this ecological RA, a value of 0.01 mg/kg BW/day (NOAEL) was used for the robin, woodcock, wren, and hawk models. These values were developed from the kingerfisher and red-tailed hawk (Fimreite and Karstad, 1971).

Nickel (surface soil)

Surface soil toxicity studies were conducted by Dixon (1988) that measured the response of red oak seedling s grown for 16 weeks in a sandy loam soil (pH 6 SU, 1.5 percent organic matter) with the addition on nickel

(as nickel chloride). Nickel at 50 ppm reduced tree weight by 30 percent, while 20 ppm had no effect. A study by Khalid and Tinsley (1980) measured a 66 percent reduction in ryegrass shoot weight with the addition of 180 ppm of nickel (as nickel sulfate) to a loam soil (pH 4.7). Addition of 90 ppm of nickel had no effect. The plants were grown 4 weeks from seed.

Wallace et al. (1977b) conducted experiments on the effects of nickel (as nickel sulfate) on the seedling of a variety of plants grown in a loam soil at several pHs. Corn grown in soil at pH 4.2, 5.6, and 7.5 SU experienced 74, 80, and 50 percent (respectively) reductions in shoot weight after 14 days of growth, with the addition of 250 ppm of nickel. Nickel at 100 ppm had no effect. At pH 5.8, bush beans grown for 16 days had a 64 percent reduction in shoot weight with the addition of 100 ppm of nickel. At pH 7.5, a 36 percent reduction in plant weight occurred with 250 ppm of nickel, while 100 ppm had no effect. After 28 days, of growth in a loam soil at pH 5.8, bush bean leaf weight was reduced 45 percent by the addition of 100 ppm of nickel, while 25 ppm showed no effect.

A benchmark value of 30 ppm of nickel was established for plants. The confidence level of this benchmark is low because of the inconsistencies with results of various studies.

Effects of nickel (as nickel acetate) on earthworms were investigated by Malecki et al. (1982). The most sensitive parameter was cocoon production. In the 8-week study, 300 ppm of nickel caused a 41 percent decrease in cocoon production, while 200 ppm had no effect. In the 20-week study, 200 ppm of nickel caused a 23 percent decrease in cocoon production, while 100 ppm had no effect. A benchmark value for earthworms of 200 ppm of nickel was developed from this study. Confidence in this benchmark is low because of the lack of data.

Effect of nickel (as nickel sulfate) on dehydrogenase activity of the native soil microflora in soil from the Rocky Mountain Arsenal was assessed by Rogers and Li (1985). Soil was amended with glucose and alfalfa, with the metal salts added in solution. After 6 days, a concentration of 30 ppm (lowest concentration tested) nickel reduced dehydrogenase activity by 39 percent.

Babich and Stotzky (1982) evaluated the effects of two forms of nickel on mycelial growth rate number of soil-dwelling fungi inoculated individually into autoclaved sandy loam soil. The concentrations at which growth was reduced ranged from 50 to 750 ppm for nickel (added in chloride or sulfate form).

Bhuiya and Cornfield (1974) assessed the effects of nickel on carbon mineralization by native microflora in a sandy soil, with or without added organic matter. Metals were added to the soil as oxides to achieve a concentration of 1,000 ppm and a small amount of ground oat straw was added to part of the soil before a 2-month equilibr5ation period. After 12 weeks, soil respiration was reduced in the nickel treated soil with or without the oat straw, but to a greater degree with the straw-amended soil.

Al-Khafaji and Tabatabai (1979) conducted a study on the effects of nickel on arylsulfatase activity. In only one soil was the highest concentration tested (1,467ppm), found to reduce arylsulfatase activity. This soil had the lowest pH and organic matter content of the four soils tested.

Haanstra and Doelman (1991) investigated short- and long-term effects of nickel on arylsulfatase activity, urease activity (Doelman and Haanstra, 1986), and total phosphatase activity by native soil (Doelman and Haanstra, 1989) microflora in five soils (sand, sandy loam, silt loam, clay, and sandy peat) of varying characteristics. Soil pH ranged from 7.7 to 4 SU, organic matter content from 1.6 to 12.8 percent, and clay content from 2 to 60 percent. Metals were added as salts to the sieved soils in flasks, and enzyme activity

was measured after 6 weeks of incubation. Data from the sandy peat soil were not available for arylsulfatase and phosphatase activities. The highest EC_{50}s (5659, 616, and 3380 ppm for arylsulfatase, phosphatase, and urease activities) were found in the soil with the highest clay content. The lowest were 2119, 1109, and 100 ppm, for arylsulfatase, phosphatase, and urease activities found in the sand. In the 18-month study, data from the sandy loam soil were not available for arylsulfatase activity nor from clay and sandy peat for phosphatase activities. The highestEC_{50}s were 8101, 8042, 2790 ppm nickel for arylsulfatase, phosphatase, and urease activities in different soils. The lowest LC_{50}s 92, 769, and 370 ppm, were found in the sand.

A benchmark for soil microorganisms and processes was established at 90 ppm of nickel. This value is based on 56 studies; therefore, the confidence level for the benchmark is high. To be conservative, the soil toxicity benchmark used in the ecological RA for nickel was 30 ppm (established for flora).

Wistar rats fed nickel sulfate demonstrated no effects to 187.5 mg/kg/day to most systems, except body weight (Ambrose et al., 1976). This level of nickel sulfate caused a 27 to 29 percent decrease in body weight. A similar study (Ambrose et al., 1976) conducted on beagle dogs found a NOAEL to be 62.5 mg/kg/day. For this ecological RA, a NOAEL of 62.5 mg/kg/day developed from the beagle dog study was used in the vole, fox, mouse, and shrew models.

No NOAELs were located for the robin, woodcock, wren, and hawk; therefore, the effects of nickel were not determined in these species.

Silver (surface soil and sediment)

A NOAEL concentration for sediment was not found. However, the ER-M value of 3.7 mg/kg (Long et al., 1995)was used as a benchmark to assess sediment concentrations in this ecological RA.

There are no primary reference data available detailing silver toxicity to plant growth. Kabata-Pendias and Pendias (1984) reported unspecified toxic effects on plant growth in surface soil with 2 ppm of silver. A plant NOAEL value of 0.2 ppm was used in this assessment. The confidence in this benchmark is low due to the lack of data.

Bremner and Douglas (1971) evaluated the effects of silver on urease activity in two soil types with similar pH, organic matter and clay content characteristics. Silver was added in solution at a concentration of 50 ppm and urease activity was determined after 5 hours. Silver added as either nitrate or sulfate salt, decreased urease activity by 60 to 65-percent in both soils. Liang and Tabatabai (1977) conducted a test on the effect of silver on nitrogen mineralization by native soil microflora in four soils, varying in pH from 6 to 7.8, clay from 23 to 34 percent, and organic matter content from 6 to 11 percent. Silver at 540 ppm reduced nitrogen mineralization in all soils. The greatest magnitude of the inhibitory effect was seen in the soil with the lowest pH and organic and clay contents.

Al-Khafaji and Tabatabai (1979) studied the influence of soil characteristics on effects of Al (as $AlCl_3$) on arylsulfatase activity. Soils were chosen with a range in pH, organic matter, and clay contents (6.2 to 7.6 SU; 5.4 to 10.6 percent; 26 to 34 percent). Air-dried, sieved soil samples were placed in flasks with the test chemical added in solution. The samples were incubated for 90 minutes before microbial activity was stopped and arylsulfatase activity measured. In two soils tested with a lowest concentration of 270 ppm, arylsulfatase activity was greatly reduced. In the two soils tested with a lowest concentration of 2698 ppm, arylsulfatase activity was almost totally inhibited.

A study conducted by Frankenberger and Tabatabai (1981) determined the effect of silver on amidase activity in three soils in shaker-flask assays as described previously. After 2 1/2 hours, amidase activity was severely reduced in all three soils at 2698 ppm. The greatest reduction occurred in the soil with the lowest pH and organic matter and clay contents.

Juma and Tabatabai (1977) conducted a study using three soils to test effects and acid phosphatase activity with pH ranging from 5.8 to 7.8 SU, organic matter ranging from 5.2 to 11 percent, and clay ranging from 23 to 30 percent. Acid phosphatase activity was affected at 2698 ppm only in the soil with the highest pH (7.8). Alkaline phosphatase activity was reduced 28 percent in the loam soil at a silver concentration of 270 ppm and 93% at 2698 ppm in a clay loam soil.

A benchmark of 50 ppm of silver was established based on the 17 reported effective values. Confidence in this benchmark is moderate.

Vanadium (surface soil and sediment)

No sediment NOAEL values for vanadium were found; therefore, vanadium effects on the benthic community were not assessed.

There are no primary reference data available detailing vanadium toxicity to plant growth. Kabata-Pendias and Pendias (1984) reported unspecified toxic effects on plant growth in surface soil with 50 ppm of vanadium. Vanadium added at a concentration of 2.5 ppm was toxic to plants in a study conducted by the USEPA (1980). A plant benchmark value of 2 ppm of vanadium has been established from these two studies. The confidence in this benchmark is low due to the lack of data.

A study conducted by Tyler (1976) evaluated the effect of vanadium, added in a solution of sodium vanadate to fresh needles from a white pine stand, on acid phosphatase activity of the native microflora. After three hours of exposure, activity was reduced 40 percent by 50 ppm of vanadium, while 30 ppm had no effect.

A study conducted by Al-Khafaji (1979) evaluated the effect of vanadium on arylsulfatase activity. Soils were chosen with a range in pH (6.2 to 7.6 SU), organic matter (5.6 to 10.6 percent), and clay contents (26 to 34 percent). Air-dried, sieved soil samples were placed in flasks with the test chemical added in solutions. The samples were incubated for 90 minutes before microbial activity was stopped and arylsulfatase activity measured. In two soils tested with a lowest concentration of 127 ppm, arylsulfatase activity was reduced with the greatest reduction in the soil with the lowest clay content. In the two soils tested with the lowest concentration of 1,273 ppm, arylsulfatase activity was severely inhibited.

A similar study conducted (Juma and Tabatai, 1977) using the same system and three of the same soils to evaluate the effects of several inorganics on soil acid and alkaline phosphatase activities. Three soils were used to test effects and acid phosphatase activity with ranging pH (5.8 to 7.8 SU), organic matter (5.2 to 11%), and clay content (23 to 30 percent). Alkaline phosphatase activity was not tested in the most acidic soil. Acid phosphatase activity in all three soils was reduced about the same degree at 1,273 ppm vanadium. In the soil with the lowest pH and organic matter and clay content, it was also inhibited at 127.3 ppm vanadium. Alkaline phosphatase activity ain both soils tested was reduced about the same degree at 1,273 ppm. In the soil with the highest organic matter and clay content, it was also inhibited at 127.3 ppm vanadium.

Lighthart et al. (1977) evaluated the effects of vanadium at a single concentration on respiration of native soil

microflora in small coniferous forest soil/litter microcosms. Metals in solution form were mixed into the soil and litter which were then layered in the microcosm. Vanadium at 23 ppm reduced respiration by 21%.

The effective concentration of 23 ppm of vanadium (Lighthart et al., 1977) is the lowest of the ten reported. Confidence in the benchmark of 20 ppm is moderate. A NOAEL of 2 ppm (20 ppm divided by 10) was used to assess effects to soil fauna in this ecological RA.

A NOAEL of 11.38 mg/kg/day developed from a mallard duck study (White and Dieter, 1978) was used in the terrestrial models for the robin, heron, woodcock, wren, and hawk. A NOAEL of 0.2 mg/kg/day and a LOAEL of 2.1 mg/kg/day developed from a rat study (Domingo et al., 1986) were used in the vole, shrew, fox, and mouse terrestrial models. No toxicity values for the bass and frog were located; therefore, vanadium was not assessed in these models.

In a study performed by White and Dieter (1978), a mallard duck, weighting 1.17 kg, was fed vanadium (as vanadyl sulfate) over a 12 week period (> 10 weeks is considered chronic). The duck was feed vanadium at three dosage levels: 2.84 ppm, 10.36 ppm, and 110 ppm vanadium in food. The endpoints studied were mortality, body weight, and blood chemistry. No effects observed at any dose level. Because this study was greater than 10 weeks in duration and did not consider a critical life stage (i.e., reproduction), the maximum dose was considered a chronic NOAEL. The final NOAEL of 11.38 mg/kg/day was calculated using the feeding rate (121 g food/day) and the body weight (1.17 kg).

In a study performed by Domingo et al. (1986), a rat, weighting 0.26 kg, was fed vanadium (in the form of sodium metavanadate) 60 days before gestation, plus through gestation, delivery, and lactation. The duck was given vanadium, through oral intubation, at three dosages levels: 5, 10, and 20 mg NaVO3/kg/day. The endpoint studied was reproduction. Significant differences in reproductive parameters (e.g., no. dead young/litter, size and weight of offspring, etc.) were observed at all dose levels. Therefore, the lowest dose was considered a chronic LOAEL. To estimate the chronic NOAEL, the chronic LOAEL was multiplied by a LOAEL-NOAEL uncertainty factor of 0.1.

Zinc (surface soil)

Muramoto et al. (1990) measured the effects of the addition of zinc (as zinc oxide) to an alluvial soil (pH of 6 SU) on root and stem weights, stem length, and gran yield of wheat and rice grown from seed to maturity. Root weight of rice was reduced about 29 percent by 1,000 ppm (lowest concentration tested). Wheat grain yield and plant weight were reduced 66 and 28 percent by 1,000 ppm, respectively.

The number of soybean seeds produced per plant decreased by 28 percent when plants were grown in an average garden soil to which 25 ppm of zinc was added (as zinc sulfate) (Aery and Sakar, 1991). Zinc at 10 ppm had no effect. Nodule weight and number of seed weight were not affected by 25 ppm of zinc. Plants were grown from seed to maturity.

White et al. (1979) evaluated the effect of zinc (as zinc sulfate) on leaf and root weight of soybeans grown in a sandy loam soil at two pH levels. Leaf weight was reduced 30 percent by 131 ppm zinc at pH 5.5 SU, while 115 ppm had no effect. At pH 6.5 ppm, leaf weight was reduced 33 percent by 393 ppm of zinc.

Gall and Barnette (1940) investigated the effect of zinc (as zinc sulfate) on corn and cowpeas grown in three soils for 30 days from seed. Results of this study are not directly comparable to most other because the authors report effect concentrations as "exchangeable," that is, zinc associated with the colloidal portion of

the soil. Corn shoot weight was reduced 68 percent in a sandy soil at 404 ppm of exchangeable zinc, while 303 ppm had no effect. In a clay loam soil, the reduction was 33 percent at 632 ppm, while 474 had no effect. Cowpea shoot weight was reduced 29 percent in a sandy soil at 141 ppm of exchangeable zinc, while 81 ppm had no effect. In a clay loam soil, the reduction was 28 percent at 316 ppm, while 158 ppm had no effect.

A plant benchmark value of 50 ppm of zinc was developed from these studies. This benchmark has a moderate degree of confidence associated with it. This benchmark of 50 ppm was used in the ecological RA to assess zinc concentrations impact on soil flora.

Wilson (1977) evaluated the effect of zinc (as zinc sulfate) on nitrification by native microflora in three soils. The soils ranged in pH from 5.1 to 6.2 SU, 1.1 to 2.4 percent organic matter, and 2 to 28 percent clay. After 49 days, nitrification was severely inhibited by all three soils (98 to 100 percent) by 1,000 ppm of zinc, while zinc at 100 ppm had no effect.

Haanstra and Doelman (1991) investigated short- and long-term effects of zinc on arylsulfatase activity, urease activity (Doelman and Haanstra, 1986), and total phosphatase activity (Doelman and Haanstra, 1989) by native soil microflora in five soils. In the 6-week study, the highest EC_{50}s developed were 5559, 3623, and 1780 ppm for arylsulfatase, phosphatase, and urease activities, respectively, all in the soil with the greatest clay content. The lowest EC_{50}s of 909, 220, and 420 ppm of zinc were found in the sand. In the 18-month study, data were not available from the sandy peat for phosphatase or the silt loam for urease. The highest EC_{50}s were 9679, 4872, and 290 ppm of zinc in different soils. The lowest EC_{50}s were 375, 170, and 70 ppm in different soils.

Laskowski et al. (1994) studied the effects of several metals at low to moderate levels on the respiration rate of acid-mixed forest litter. The fresh litter was treated with solutions of cadmium chloride (up to 250 ppm of cadmium), lead nitrate (up to 2500 ppm of lead), or zinc chloride. Only zinc had an effect at the concentrations tested. A concentration of 1000 ppm of zinc reduced respiration by 26 percent; zinc at 200 ppm had no effect.

Lighthart et al. (1977) evaluated the effects of zinc at a single concentration on respiration of native soil microflora in soil/litter microcosms. Metals in solution form were mixed into the soil and litter which were then layered in the microcosm. Zinc at 3600 ppm reduced respiration by 66 percent.

Premi and Cornfield (1969, 1969/1970) investigated the effects of zinc added to a sandy loam soil on nitrogen transformation by native soil microflora. In a 21-day study (1969), nitrification was severely inhibited by 100 ppm of zinc, added as a sulfate salt, the lowest concentration tested. Zinc added in carbonate form was ineffective at 10,000 ppm (highest concentration tested), probably because of the increase in soil pH caused by addition of this form. In the 8-week study (1969/1970), with sucrose ammonium nitrate added to the soil, nitrification was decreased only slightly less at 100 ppm of zinc than it was in the 21-day study.

A benchmark of 100 ppm was developed from 46 studies. This benchmark is the 10th percentile of effective values. Confidence in this benchmark is high because of the large amount of data available for a variety of functional response factors.

No value for bass was found; therefore, zinc was not assessed in the fish model.

A study (NAS, 1979) conducted on a ferret demonstrated a dose of 370 mg/kg/day of zinc caused decrease in food intake and weight loss. A NOAEL of 37 mg/kg/day (370 mg/kg divided by 10) was used in the frog model (NAS, 1979).

A dog study (NAS, 1979) demonstrated that 1,000 mg/kg (25 mg/kg/day) of zinc caused no effects after one year. This NOAEL of 25 mg/kg/day was used in the shrew, fox, mouse, and vole models (NAS, 1979).

A study (Stahl et al., 1989) conducted on chickens demonstrated that a zinc dose of 144.5 mg/kg/day caused a degrease in growth and anemia. In a similar chicken study (Dean et al., 1991), a zinc concentration of 361 mg/kg/day caused a reduction in body weight. A study conducted by Hill and Camardese (1986) on Japanese quail demonstrated that at a zinc concentration of 139 mg/kg/day caused 7 percent mortality in chicks and reduced food intake. For this ecological RA, a NOAEL of 13.9 mg/kg/day (139 mg/kg/day divided by 10) was used in the models for the robin, heron, woodcock, wren, and hawk (Hill and Camardese, 1986).

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APPENDIX M
RECEPTOR MODELS

APPENDIX M.1
CONCENTRATIONS OF THE ECOLOGICAL CONTAMINANTS OF CONCERN

SITE 11 - TERRESTRIAL RECEPTOR MODELS
NAVAL WEAPONS STATION YORKTOWN

Ecological Contaminant of Concern	Surface Soil Mean (mg/kg)	Surface Soil Maximum (mg/kg)
Bis(2-ethylhexyl)phthalate	0.12	0.12
amino-Dinitrotoluene	0.19	0.59
Trinitrotoluene,2,4,6-	0.14	0.37
Aluminum	5623.85	10300
Antimony	0.43	1
Beryllium	0.15	0.47
Chromium	11.24	48.9
Copper	45.5	220
Iron	7827.69	19300
Lead	25.88	48.5
Mercury	0.21	1.6
Nickel	4.6	9.2
Silver	6.67	28
Vanadium	12.8	33.4
Zinc	42.47	76.7

Bis (2-ethylhexyl)phthalate maximum concentrations is greater than the mean

SITE 11 - AQUATIC RECEPTOR MODELS
NAVAL WEAPONS STATION YORKTOWN

Ecological Contaminant of Concern	Sediment Mean (mg/kg)	Sediment Maximum (mg/kg)
Aluminum	4122	5850
Cobalt	2.24	4.1
Silver	0.59	1.2
Vanadium	9.52	14.6

SITE 17 SOIL AREA OF CONCERN - TERRESTRIAL RECEPTOR MODELS
NAVAL WEAPONS STATION YORKTOWN

Ecological Contaminant of Concern	Surface Soil Mean (mg/kg)	Surface Soil Maximum (mg/kg)
Acenaphthene	0.2575	0.43
Acenaphthylene	1.14875	2.8
Anthracene	0.605	1.1
Benzo(a)anthracene	2.365	6.5
Benzo(a)pyrene	3.235	9.5
Benzo(b)fluoranthene	3.1975	8.5
Benzo(g,h,i)perylene	1.71175	5
Benzo(k)fluoranthene	1.0785	3
Bis(2-ethylhexyl)phthalate	0.24375	0.17
Carbazole	0.28	0.54
Chrysene	2.745	7.6
Dibenzo(a,h)anthracene	0.63	1.7
Dibenzofuran	0.3975	0.38
Fluoranthene	2.8525	5.9
Fluorene	0.3075	0.51
Indeno(1,2,3-cd)pyrene	1.48675	4.3
Methylnaphthalene,2-	0.2855	0.094
Naphthalene	0.4	0.39
Phenanthrene	1.8825	4.4
Pyrene	3.5925	9.5
Aluminum	4675	5230
Beryllium	0.17	0.29
Chromium	7.8	9.4
Cyanide	0.12	0.19
Iron	5647.5	7380
Lead	24.83	29
Mercury	0.08	0.13
Nickel	3.65	4.5
Vanadium	12.15	14.6
Zinc	51.38	124

SITE 17 PROPER - TERRESTRIAL RECEPTOR MODELS
NAVAL WEAPONS STATION YORKTOWN

Ecological Contaminant of Concern	Surface Soil Mean (mg/kg)	Surface Soil Maximum (mg/kg)
Benzo(a)anthracene	0.1812	0.26
Benzo(a)pyrene	0.1911	0.2
Benzo(b)fluoranthene	0.17315	0.29
Benzo(k)fluoranthene	0.1759	0.14
Bis(2-ethylhexyl)phthalate	0.2237	1.3
Carbazole	0.19465	0.065
Chrysene	0.16985	0.3
Dibenzofuran	0.2019	0.043
Fluoranthene	0.19525	0.55
Indeno(1,2,3-cd)pyrene	0.18995	0.11
Phenanthrene	0.2283	0.64
Pyrene	0.18695	0.46
Aluminum	4559	7950
Chromium	6.46	15
Copper	4.09	27.6
Cyanide	0.11	0.26
Iron	5411	12300
Lead	9.15	19.4
Mercury	0.08	0.19
Nickel	3.1	6.2
Vanadium	11.93	19
Zinc	15.3	39.9

APPENDIX M.2
SITE 11 TERRESTRIAL RECEPTOR MODELS

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

American Woodcock
(Conservative Inputs)

Body Weight	0.1650000 kg
Food Ingestion Rate	0.0830000 kg/day
Water Ingestion Rate	0.0169380 L/day
Soil Ingestion Rate	0.0075000 kg/day

Maximum Concentrations Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworm Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.065818182	1.11	11.1	5.93E-02	5.93E-03
amino-Dinitrotoluene	0.59	0	0.59	0.323606061	0	0	NA	NA
Trinitrotoluene,2,4,6-	0.37	0	0.37	0.202939394	3	30	6.76E-02	6.76E-03
Aluminum	10300	0	10300	5649.393939	109.7	1097	5.15E+01	5.15E+00
Antimony	1	0	1	0.548484848	0	0	NA	NA
Beryllium	0.47	0	0.47	0.257787879	0	0	NA	NA
Chromium	48.9	0	48.9	26.82090909	0.1	10	2.68E+02	2.68E+00
Copper	220	0	220	120.6666667	0.235	2.35	5.13E+02	5.13E+01
Iron	19300	0	19300	10585.75758	100	1000	1.06E+02	1.06E+01
Lead	48.5	0	48.5	26.60151515	0.3	3	8.87E+01	8.87E+00
Mercury	1.6	0	1.6	0.877575758	0.01	0.1	8.78E+01	8.78E+00
Nickel	9.2	0	9.2	5.046060606	0	0	NA	NA
Silver	28	0	28	15.35757576	0	0	NA	NA
Vanadium	33.4	0	33.4	18.31939394	11.38	113.8	1.61E+00	1.61E-01
Zinc	76.7	0	76.7	42.06878788	13.9	139	3.03E+00	3.03E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

American Woodcock
(Conservative Inputs)

Body Weight	0.1650000 kg
Food Ingestion Rate	0.0830000 kg/day
Water Ingestion Rate	0.0169380 L/day
Soil Ingestion Rate	0.0075000 kg/day

Mean Concentrations Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworn Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.065818182	1.11	11.1	5.93E-02	5.93E-03
amino-Dinitrotoluene	0.19	0	0.19	0.104212121	0	0	NA	NA
Trinitrotoluene,2,4,6-	0.14	0	0.14	0.076787879	3	30	2.56E-02	2.56E-03
Aluminum	5623.85	0	5623.85	3084.596515	109.7	1097	2.81E+01	2.81E+00
Antimony	0.43	0	0.43	0.235848485	0	0	NA	NA
Beryllium	0.15	0	0.15	0.082272727	10	0	NA	NA
Chromium	11.24	0	11.24	6.164969697	0.1	10	6.16E+01	6.16E-01
Copper	45.5	0	45.5	24.95606061	0.235	2.35	1.06E+02	1.06E+01
Iron	7827.69	0	7827.69	4293.369364	100	1000	4.29E+01	4.29E+00
Lead	25.88	0	25.88	14.19478788	0.3	3	4.73E+01	4.73E+00
Mercury	0.21	0	0.21	0.115181818	0.01	0.1	1.15E+01	1.15E+00
Nickel	4.6	0	4.6	2.523030303	0	0	NA	NA
Silver	6.67	0	6.67	3.658393939	0	0	NA	NA
Vanadium	12.8	0	12.8	7.020606061	11.38	113.8	6.17E-01	6.17E-02
Zinc	42.47	0	42.47	23.29415152	13.9	139	1.68E+00	1.68E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

American Woodcock
(Less Conservative Inputs)

Body Weight	0.1693800 kg
Food Ingestion Rate	0.1304226 kg/day
Water Ingestion Rate	0.0169380 L/day
Soil Ingestion Rate	0.0135640 kg/day

Maximum Concentrations Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworm Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.1020096	1.11	11.1	9.19E-02	9.19E-03
amino-Dinitrotoluene	0.59	0	0.59	0.501547199	0	0	NA	NA
Trinitrotoluene,2,4,6-	0.37	0	0.37	0.314529599	3	30	NA	NA
Aluminum	10300	0	10300	8755.823976	109.7	1097	7.98E+01	7.98E+00
Antimony	1	0	1	0.850079998	0	0	NA	NA
Beryllium	0.47	0	0.47	0.399537599	10	0	NA	NA
Chromium	48.9	0	48.9	41.56891188	0.1	10	4.16E+02	4.16E+00
Copper	220	0	220	187.0175995	0.235	2.35	7.96E+02	7.96E+01
Iron	19300	0	19300	16406.54395	100	1000	1.64E+02	1.64E+01
Lead	48.5	0	48.5	41.22887989	0.3	3	1.37E+02	1.37E+01
Mercury	1.6	0	1.6	1.360127996	0.01	0.1	1.36E+02	1.36E+01
Nickel	9.2	0	9.2	7.820735978	0	0	NA	NA
Silver	28	0	28	23.80223993	0	0	NA	NA
Vanadium	33.4	0	33.4	28.39267192	11.38	113.8	2.49E+00	2.49E-01
Zinc	76.7	0	76.7	65.20113582	13.9	139	4.69E+00	4.69E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

American Woodcock
(Less Conservative Inputs)

Body Weight	0.1693800 kg
Food Ingestion Rate	0.1304226 kg/day
Water Ingestion Rate	0.0169380 L/day
Soil Ingestion Rate	0.0135640 kg/day

Mean Concentrations Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworn Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.1020096	1.11	11.1	9.19E-02	9.19E-03
amino-Dinitrotoluene	0.19	0	0.19	0.1615152	0	0	NA	NA
Trinitrotoluene,2,4,6-	0.14	0	0.14	0.1190112	3	30	NA	NA
Aluminum	5623.85	0	5623.85	4780.722395	109.7	1097	4.36E+01	4.36E+00
Antimony	0.43	0	0.43	0.365534399	0	0	NA	NA
Beryllium	0.15	0	0.15	0.127512	10	0	NA	NA
Chromium	11.24	0	11.24	9.554899173	0.1	10	9.55E+01	9.55E-01
Copper	45.5	0	45.5	38.67863989	0.235	2.35	1.65E+02	1.65E+01
Iron	7827.69	0	7827.69	6654.162697	100	1000	6.65E+01	6.65E+00
Lead	25.88	0	25.88	22.00007034	0.3	3	7.33E+01	7.33E+00
Mercury	0.21	0	0.21	0.1785168	0.01	0.1	1.79E+01	1.79E+00
Nickel	4.6	0	4.6	3.910367989	0	0	NA	NA
Silver	6.67	0	6.67	5.670033584	0	0	NA	NA
Vanadium	12.8	0	12.8	10.88102397	11.38	113.8	9.56E-01	9.56E-02
Zinc	42.47	0	42.47	36.1028975	13.9	139	2.60E+00	2.60E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Red-Tailed Hawk
(Conservative Inputs)

Body Weight	0.9570000 kg
Food Ingestion Rate	0.4000000 kg/day
Water Ingestion Rate	0.0564600 L/day
Soil Ingestion Rate	0.0028000 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.050507837	1.11	11.1	4.55E-02	4.55E-03
amino-Dinitrotoluene	0.59	0	0.59	0.248330199	0	0	NA	NA
Trinitrotoluene,2,4,6-	0.37	0	0.37	0.155732497	3	30	5.19E-02	5.19E-03
Aluminum	10300	0	10300	4335.256008	109.7	1097	3.95E+01	3.95E+00
Antimony	1	0	1	0.420898642	NA	NA	NA	NA
Beryllium	0.47	0	0.47	0.197822362	NA	NA	NA	NA
Chromium	48.9	0	48.9	20.58194357	0.1	1	2.06E+02	2.06E+01
Copper	220	0	220	92.59770115	0.235	2.35	3.94E+02	3.94E+01
Iron	19300	0	19300	8123.343783	100	1000	8.12E+01	8.12E+00
Lead	48.5	0	48.5	20.41358412	0.3	3	6.80E+01	6.80E+00
Mercury	1.6	0	1.6	0.673437827	0.01	0.1	6.73E+01	6.73E+00
Nickel	9.2	0	9.2	3.872267503	NA	NA	NA	NA
Silver	28	0	28	11.78516196	NA	NA	NA	NA
Vanadium	33.4	0	33.4	14.05801463	11.38	113.8	1.24E+00	1.24E-01
Zinc	76.7	0	76.7	32.28292581	13.9	139	2.32E+00	2.32E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Red-Tailed Hawk
(Conservative Inputs)

Body Weight	0.9570000 kg
Food Ingestion Rate	0.4000000 kg/day
Water Ingestion Rate	0.0564600 L/day
Soil Ingestion Rate	0.0028000 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammals Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.050507837	1.11	11.1	4.55E-02	4.55E-03
amino-Dinitrotoluene	0.19	0	0.19	0.079970742	0	0	NA	NA
Trinitrotoluene,2,4,6-	0.14	0	0.14	0.05892581	3	30	1.96E-02	1.96E-03
Aluminum	5623.85	0	5623.85	2367.070825	109.7	1097	2.16E+01	2.16E+00
Antimony	0.43	0	0.43	0.180986416	0	0	NA	NA
Beryllium	0.15	0	0.15	0.063134796	0	0	NA	NA
Chromium	11.24	0	11.24	4.730900731	0.1	1	4.73E+01	4.73E+00
Copper	45.5	0	45.5	19.15088819	0.235	2.35	8.15E+01	8.15E+00
Iron	7827.69	0	7827.69	3294.664088	100	1000	3.29E+01	3.29E+00
Lead	25.88	0	25.88	10.89285684	0.3	3	3.63E+01	3.63E+00
Mercury	0.21	0	0.21	0.088388715	0.01	0.1	8.84E+00	8.84E-01
Nickel	4.6	0	4.6	1.936133751	0	0	NA	NA
Silver	6.67	0	6.67	2.807393939	NA	NA	NA	NA
Vanadium	12.8	0	12.8	5.387502612	11.38	113.8	4.73E-01	4.73E-02
Zinc	42.47	0	42.47	17.87556531	13.9	139	1.29E+00	1.29E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Red-Tailed Hawk
(Less Conservative Inputs)

Body Weight	1.1340000 kg
Food Ingestion Rate	0.1120000 kg/day
Water Ingestion Rate	0.0646400 L/day
Soil Ingestion Rate	0.0030000 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.012169312	1.11	11.1	1.10E-02	1.10E-03
amino-Dinitrotoluene	0.59	0	0.59	0.059832451	0	0	NA	NA
Trinitrotoluene,2,4,6-	0.37	0	0.37	0.037522046	3	30	NA	NA
Aluminum	10300	0	10300	1044.532628	109.7	1097	9.52E+00	9.52E-01
Antimony	1	0	1	0.101410935	0	0	NA	NA
Beryllium	0.47	0	0.47	0.047663139	10	0	NA	NA
Chromium	48.9	0	48.9	4.958994709	0.1	1	4.96E+01	4.96E+00
Copper	220	0	220	22.31040564	0.235	2.35	9.49E+01	9.49E+00
Iron	19300	0	19300	1957.231041	100	1000	1.96E+01	1.96E+00
Lead	48.5	0	48.5	4.918430335	0.3	3	1.64E+01	1.64E+00
Mercury	1.6	0	1.6	0.162257496	0.01	0.1	1.62E+01	1.62E+00
Nickel	9.2	0	9.2	0.9329806	0	0	NA	NA
Silver	28	0	28	2.839506173	0	0	NA	NA
Vanadium	33.4	0	33.4	3.38712522	11.38	113.8	2.98E-01	2.98E-02
Zinc	76.7	0	76.7	7.778218695	13.9	139	5.60E-01	5.60E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Red-Tailed Hawk
(Less Conservative Inputs)

Body Weight	1.1340000 kg
Food Ingestion Rate	0.1120000 kg/day
Water Ingestion Rate	0.0646400 L/day
Soil Ingestion Rate	0.0030000 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.012169312	1.11	11.1	1.10E-02	1.10E-03
amino-Dinitrotoluene	0.19	0	0.19	0.019268078	0	0	NA	NA
Trinitrotoluene,2,4,6-	0.14	0	0.14	0.014197531	3	30	NA	NA
Aluminum	5623.85	0	5623.85	570.3198854	109.7	1097	5.20E+00	5.20E-01
Antimony	0.43	0	0.43	0.043606702	0	0	NA	NA
Beryllium	0.15	0	0.15	0.01521164	10	0	NA	NA
Chromium	11.24	0	11.24	1.139858907	0.1	1	1.14E+01	1.14E+00
Copper	45.5	0	45.5	4.614197531	0.235	2.35	1.96E+01	1.96E+00
Iron	7827.69	0	7827.69	793.8133598	100	1000	7.94E+00	7.94E-01
Lead	25.88	0	25.88	2.624514991	0.3	3	8.75E+00	8.75E-01
Mercury	0.21	0	0.21	0.021296296	0.01	0.1	2.13E+00	2.13E-01
Nickel	4.6	0	4.6	0.4664903	0	0	NA	NA
Silver	6.67	0	6.67	0.676410935	0	0	NA	NA
Vanadium	12.8	0	12.8	1.298059965	11.38	113.8	NA	NA
Zinc	42.47	0	42.47	4.306922399	13.9	139	3.10E-01	3.10E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

American Robin
(Conservative Inputs)

Body Weight	0.0773000 kg
Food Ingestion Rate	0.1175000 kg/day
Water Ingestion Rate	0.0108000 L/day
Soil Ingestion Rate	0.0352500 kg/day

Maximum Concentrations Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.237128072	1.11	11.1	2.14E-01	2.14E-02
amino-Dinitrotoluene	0.59	0	0.59	1.16587969	0	0	NA	NA
Trinitrotoluene,2,4,6-	0.37	0	0.37	0.73114489	3	30	2.44E-01	2.44E-02
Aluminum	10300	0	10300	20353.49288	109.7	1097	1.86E+02	1.86E+01
Antimony	1	0	1	1.97606727	NA	NA	NA	NA
Beryllium	0.47	0	0.47	0.928751617	NA	NA	NA	NA
Chromium	48.9	0	48.9	96.62968952	0.1	1	9.66E+02	9.66E+01
Copper	220	0	220	434.7347995	0.235	2.35	1.85E+03	1.85E+02
Iron	19300	0	19300	38138.09832	100	1000	3.81E+02	3.81E+01
Lead	48.5	0	48.5	95.83926261	0.3	3	3.19E+02	3.19E+01
Mercury	1.6	0	1.6	3.161707633	0.01	0.1	3.16E+02	3.16E+01
Nickel	9.2	0	9.2	18.17981889	NA	NA	NA	NA
Silver	28	0	28	55.32988357	NA	NA	NA	NA
Vanadium	33.4	0	33.4	66.00064683	11.38	113.8	5.80E+00	5.80E-01
Zinc	76.7	0	76.7	151.5643596	13.9	139	1.09E+01	1.09E+00

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

American Robin
(Conservative Inputs)

Body Weight	0.0773000 kg
Food Ingestion Rate	0.1175000 kg/day
Water Ingestion Rate	0.0108000 L/day
Soil Ingestion Rate	0.0352500 kg/day

Mean Concentrations Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.237128072	1.11	11.1	2.14E-01	2.14E-02
amino-Dinitrotoluene	0.19	0	0.19	0.375452781	0	0	NA	NA
Trinitrotoluene,2,4,6-	0.14	0	0.14	0.276649418	3	30	9.22E-02	9.22E-03
Aluminum	5623.85	0	5623.85	11113.10592	109.7	1097	1.01E+02	1.01E+01
Antimony	0.43	0	0.43	0.849708926	NA	NA	NA	NA
Beryllium	0.15	0	0.15	0.296410091	NA	NA	NA	NA
Chromium	11.24	0	11.24	22.21099612	0.1	1	2.22E+02	2.22E+01
Copper	45.5	0	45.5	89.9110608	0.235	2.35	3.83E+02	3.83E+01
Iron	7827.69	0	7827.69	15468.04201	100	1000	1.55E+02	1.55E+01
Lead	25.88	0	25.88	51.14062096	0.3	3	1.70E+02	1.70E+01
Mercury	0.21	0	0.21	0.414974127	0.01	0.1	4.15E+01	4.15E+00
Nickel	4.6	0	4.6	9.089909444	NA	NA	NA	NA
Silver	6.67	0	6.67	13.18036869	NA	NA	NA	NA
Vanadium	12.8	0	12.8	25.29366106	11.38	113.8	2.22E+00	2.22E-01
Zinc	42.47	0	42.47	83.92357697	13.9	139	6.04E+00	6.04E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

American Robin
(Less Conservative Inputs)

Body Weight	0.0810200 kg
Food Ingestion Rate	0.0976300 kg/day
Water Ingestion Rate	0.0113400 L/day
Soil Ingestion Rate	0.0292890 kg/day

Maximum Concentrations Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.187981733	1.11	11.1	1.69E-01	1.69E-02
amino-Dinitrotoluene	0.59	0	0.59	0.92424352	0	0	NA	NA
Trinitrotoluene,2,4,6-	0.37	0	0.37	0.579610343	3	30	NA	NA
Aluminum	10300	0	10300	16135.09874	109.7	1097	1.47E+02	1.47E+01
Antimony	1	0	1	1.566514441	0	0	NA	NA
Beryllium	0.47	0	0.47	0.736261787	10	0	NA	NA
Chromium	48.9	0	48.9	76.60255616	0.1	1	7.66E+02	7.66E+01
Copper	220	0	220	344.633177	0.235	2.35	1.47E+03	1.47E+02
Iron	19300	0	19300	30233.72871	100	1000	3.02E+02	3.02E+01
Lead	48.5	0	48.5	75.97595038	0.3	3	2.53E+02	2.53E+01
Mercury	1.6	0	1.6	2.506423105	0.01	0.1	2.51E+02	2.51E+01
Nickel	9.2	0	9.2	14.41193286	0	0	NA	NA
Silver	28	0	28	43.86240434	0	0	NA	NA
Vanadium	33.4	0	33.4	52.32158233	11.38	113.8	4.60E+00	4.60E-01
Zinc	76.7	0	76.7	120.1516576	13.9	139	8.64E+00	8.64E-01

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

American Robin
(Less Conservative Inputs)

Body Weight	0.0810200 kg
Food Ingestion Rate	0.0976300 kg/day
Water Ingestion Rate	0.0113400 L/day
Soil Ingestion Rate	0.0292890 kg/day

Mean Concentrations Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.187981733	1.11	11.1	1.69E-01	1.69E-02
amino-Dinitrotoluene	0.19	0	0.19	0.297637744	0	0	NA	NA
Trinitrotoluene,2,4,6-	0.14	0	0.14	0.219312022	3	30	NA	NA
Aluminum	5623.85	0	5623.85	8809.842238	109.7	1097	8.03E+01	8.03E+00
Antimony	0.43	0	0.43	0.67360121	0	0	NA	NA
Beryllium	0.15	0	0.15	0.234977166	10	0	NA	NA
Chromium	11.24	0	11.24	17.60762232	0.1	1	1.76E+02	1.76E+01
Copper	45.5	0	45.5	71.27640706	0.235	2.35	3.03E+02	3.03E+01
Iron	7827.69	0	7827.69	12262.18942	100	1000	1.23E+02	1.23E+01
Lead	25.88	0	25.88	40.54139373	0.3	3	1.35E+02	1.35E+01
Mercury	0.21	0	0.21	0.328968033	0.01	0.1	3.29E+01	3.29E+00
Nickel	4.6	0	4.6	7.205966428	0	0	NA	NA
Silver	6.67	0	6.67	10.44865132	0	0	NA	NA
Vanadium	12.8	0	12.8	20.05138484	11.38	113.8	1.76E+00	1.76E-01
Zinc	42.47	0	42.47	66.5298683	13.9	139	4.79E+00	4.79E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Marsh Wren
(Conservative Inputs)

Body Weight	0.0103800 kg
Food Ingestion Rate	0.0090652 kg/day
Water Ingestion Rate	0.0028026 L/day
Soil Ingestion Rate	0.0009428 kg/day

Maximum Concentrations Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.1156992	1.11	11.1	1.04E-01	1.04E-02
amino-Dinitrotoluene	0.59	0	0.59	0.56885441	0	0	NA	NA
Trinitrotoluene,2,4,6-	0.37	0	0.37	0.35673921	3	30	1.19E-01	1.19E-02
Aluminum	10300	0	10300	9930.8482	109.7	1097	9.05E+01	9.05E+00
Antimony	1	0	1	0.96416002	0	0	NA	NA
Beryllium	0.47	0	0.47	0.45315521	0	0	NA	NA
Chromium	48.9	0	48.9	47.1474249	0.1	10	4.71E+02	4.71E+00
Copper	220	0	220	212.115204	0.235	2.35	9.03E+02	9.03E+01
Iron	19300	0	19300	18608.2884	100	1000	1.86E+02	1.86E+01
Lead	48.5	0	48.5	46.7617609	0.3	3	1.56E+02	1.56E+01
Mercury	1.6	0	1.6	1.54265603	0.01	0.1	1.54E+02	1.54E+01
Nickel	9.2	0	9.2	8.87027218	0	0	NA	NA
Silver	28	0	28	26.9964805	0	0	NA	NA
Vanadium	33.4	0	33.4	32.2029446	11.38	113.8	2.83E+00	2.83E-01
Zinc	76.7	0	76.7	73.9510735	13.9	139	5.32E+00	5.32E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Marsh Wren
(Conservative Inputs)

Body Weight	0.0103800 kg
Food Ingestion Rate	0.0090652 kg/day
Water Ingestion Rate	0.0028026 L/day
Soil Ingestion Rate	0.0009428 kg/day

Mean Concentrations Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.1156992	1.11	11.1	1.04E-01	1.04E-02
amino-Dinitrotoluene	0.19	0	0.19	0.1831904	0	0	NA	NA
Trinitrotoluene,2,4,6-	0.14	0	0.14	0.1349824	3	30	4.50E-02	4.50E-03
Aluminum	5623.85	0	5623.85	5422.29132	109.7	1097	4.94E+01	4.94E+00
Antimony	0.43	0	0.43	0.41458881	0	0	NA	NA
Beryllium	0.15	0	0.15	0.144624	10	0	NA	NA
Chromium	11.24	0	11.24	10.8371586	0.1	10	1.08E+02	1.08E+00
Copper	45.5	0	45.5	43.8692809	NA	NA	NA	NA
Iron	7827.69	0	7827.69	7547.14574	100	1000	7.55E+01	7.55E+00
Lead	25.88	0	25.88	24.9524613	0.3	3	8.32E+01	8.32E+00
Mercury	0.21	0	0.21	0.2024736	0.01	0.1	2.02E+01	2.02E+00
Nickel	4.6	0	4.6	4.43513609	0	0	NA	NA
Silver	6.67	0	6.67	6.43094733	0	0	NA	NA
Vanadium	12.8	0	12.8	12.3412482	11.38	113.8	1.08E+00	1.08E-01
Zinc	42.47	0	42.47	40.947876	13.9	139	2.95E+00	2.95E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Marsh Wren
(Less Conservative Inputs)

Body Weight	0.0161000 kg
Food Ingestion Rate	0.0036000 kg/day
Water Ingestion Rate	0.0040000 L/day
Soil Ingestion Rate	0.0009428 kg/day

Maximum Concentrations Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.03385924	1.11	11.1	3.05E-02	3.05E-03
amino-Dinitrotoluene	0.59	0	0.59	0.16647458	0	0	NA	NA
Trinitrotoluene,2,4,6-	0.37	0	0.37	0.10439931	3	30	NA	NA
Aluminum	10300	0	10300	2906.2512	109.7	1097	2.65E+01	2.65E+00
Antimony	1	0	1	0.28216031	0	0	NA	NA
Beryllium	0.47	0	0.47	0.13261535	10	0	NA	NA
Chromium	48.9	0	48.9	13.7976392	0.1	10	1.38E+02	1.38E+00
Copper	220	0	220	62.0752683	0.235	2.35	2.64E+02	2.64E+01
Iron	19300	0	19300	5445.69399	100	1000	5.45E+01	5.45E+00
Lead	48.5	0	48.5	13.6847751	0.3	3	4.56E+01	4.56E+00
Mercury	1.6	0	1.6	0.4514565	0.01	0.1	4.51E+01	4.51E+00
Nickel	9.2	0	9.2	2.59587486	0	0	NA	NA
Silver	28	0	28	7.9004887	0	0	NA	NA
Vanadium	33.4	0	33.4	9.42415437	11.38	113.8	8.28E-01	8.28E-02
Zinc	76.7	0	76.7	21.6416958	13.9	139	1.56E+00	1.56E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Marsh Wren
(Less Conservative Inputs)

Body Weight	0.0161000 kg
Food Ingestion Rate	0.0036000 kg/day
Water Ingestion Rate	0.0040000 L/day
Soil Ingestion Rate	0.0009428 kg/day

Mean Concentrations Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.03385924	1.11	11.1	3.05E-02	3.05E-03
amino-Dinitrotoluene	0.19	0	0.19	0.05361046	0	0	NA	NA
Trinitrotoluene,2,4,6-	0.14	0	0.14	0.03950244	3	30	NA	NA
Aluminum	5623.85	0	5623.85	1586.82726	109.7	1097	1.45E+01	1.45E+00
Antimony	0.43	0	0.43	0.12132893	0	0	NA	NA
Beryllium	0.15	0	0.15	0.04232405	10	0	NA	NA
Chromium	11.24	0	11.24	3.17148189	0.1	10	3.17E+01	3.17E-01
Copper	45.5	0	45.5	12.8382941	0.235	2.35	5.46E+01	5.46E+00
Iron	7827.69	0	7827.69	2208.66344	100	1000	2.21E+01	2.21E+00
Lead	25.88	0	25.88	7.30230884	0.3	3	2.43E+01	2.43E+00
Mercury	0.21	0	0.21	0.05925367	0.01	0.1	5.93E+00	5.93E-01
Nickel	4.6	0	4.6	1.29793743	0	0	NA	NA
Silver	6.67	0	6.67	1.88200927	0	0	NA	NA
Vanadium	12.8	0	12.8	3.61165198	11.38	113.8	3.17E-01	3.17E-02
Zinc	42.47	0	42.47	11.9833484	13.9	139	8.62E-01	8.62E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Red Fox
(Conservative Inputs)

Body Weight	4.5300000 kg
Food Ingestion Rate	0.5895500 kg/day
Water Ingestion Rate	0.3854750 L/day
Soil Ingestion Rate	0.0165074 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.0160545	0.1833	1.833	8.76E-02	8.76E-03
amino-Dinitrotoluene	0.59	0	0.59	0.07893463	1.76	17.63	4.48E-02	4.48E-03
Trinitrotoluene,2,4,6-	0.37	0	0.37	0.04950138	0.2	2	NA	NA
Aluminum	10300	0	10300	1378.01131	1.93	19.3	7.14E+02	7.14E+01
Antimony	1	0	1	0.13378751	0.035	0.35	3.82E+00	3.82E-01
Beryllium	0.47	0	0.47	0.06288013	1.3	5.4	4.84E-02	1.16E-02
Chromium	48.9	0	48.9	6.54220902	0.025	0.25	2.62E+02	2.62E+01
Copper	220	0	220	29.4332512	1	10	2.94E+01	2.94E+00
Iron	19300	0	19300	2582.09886	50	500	5.16E+01	5.16E+00
Lead	48.5	0	48.5	6.48869402	0.15	1.5	4.33E+01	4.33E+00
Mercury	1.6	0	1.6	0.21406001	0.01	0.5	2.14E+01	4.28E-01
Nickel	9.2	0	9.2	1.23084505	62.5	625	1.97E-02	1.97E-03
Silver	28	0	28	3.74605015	1.81	18.1	2.07E+00	2.07E-01
Vanadium	33.4	0	33.4	4.46850268	0.2	2	2.23E+01	2.23E+00
Zinc	76.7	0	76.7	10.2615017	25	250	4.10E-01	4.10E-02

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Red Fox
(Conservative Inputs)

Body Weight	4.5300000 kg
Food Ingestion Rate	0.5895500 kg/day
Water Ingestion Rate	0.3854750 L/day
Soil Ingestion Rate	0.0165074 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.0160545	0.1833	1.833	8.76E-02	8.76E-03
amino-Dinitrotoluene	0.19	0	0.19	0.02541963	1.76	17.63	1.44E-02	1.44E-03
Trinitrotoluene,2,4,6-	0.14	0	0.14	0.01873025	0.2	2	NA	NA
Aluminum	5623.85	0	5623.85	752.400863	1.93	19.3	3.90E+02	3.90E+01
Antimony	0.43	0	0.43	0.05752863	0.035	0.35	1.64E+00	1.64E-01
Beryllium	0.15	0	0.15	0.02006813	1.3	5.4	1.54E-02	3.72E-03
Chromium	11.24	0	11.24	1.50377156	0.025	0.25	6.02E+01	6.02E+00
Copper	45.5	0	45.5	6.0873315	1	10	6.09E+00	6.09E-01
Iron	7827.69	0	7827.69	1047.24712	50	500	2.09E+01	2.09E+00
Lead	25.88	0	25.88	3.46242064	0.15	1.5	2.31E+01	2.31E+00
Mercury	0.21	0	0.21	0.02809538	0.01	0.5	2.81E+00	5.62E-02
Nickel	4.6	0	4.6	0.61542253	62.5	625	9.85E-03	9.85E-04
Silver	6.67	0	6.67	0.89236266	1.81	18.1	4.93E-01	4.93E-02
Vanadium	12.8	0	12.8	1.71248007	0.2	2	8.56E+00	8.56E-01
Zinc	42.47	0	42.47	5.68195536	25	250	2.27E-01	2.27E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Red Fox
(Less Conservative Inputs)

Body Weight	5.0000000 kg
Food Ingestion Rate	0.3200000 kg/day
Water Ingestion Rate	0.2752000 L/day
Soil Ingestion Rate	0.0090000 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.007896	0.54	1.833	1.46E-02	4.31E-03
amino-Dinitrotoluene	0.59	0	0.59	0.038822	1.76	17.63	2.21E-02	2.20E-03
Trinitrotoluene,2,4,6-	0.37	0	0.37	0.024346	3	30	8.12E-03	8.12E-04
Aluminum	10300	0	10300	677.74	1.93	19.3	3.51E+02	3.51E+01
Antimony	1	0	1	0.0658	0.035	0.35	1.88E+00	1.88E-01
Beryllium	0.47	0	0.47	0.030926	1.3	5.4	2.38E-02	5.73E-03
Chromium	48.9	0	48.9	3.21762	0.025	0.25	1.29E+02	1.29E+01
Copper	220	0	220	14.476	1	10	1.45E+01	1.45E+00
Iron	19300	0	19300	1269.94	50	500	2.54E+01	2.54E+00
Lead	48.5	0	48.5	3.1913	0.15	1.5	2.13E+01	2.13E+00
Mercury	1.6	0	1.6	0.10528	0.01	0.5	1.05E+01	2.11E-01
Nickel	9.2	0	9.2	0.60536	62.5	625	9.69E-03	9.69E-04
Silver	28	0	28	1.8424	1.81	18.1	1.02E+00	1.02E-01
Vanadium	33.4	0	33.4	2.19772	0.2	2	1.10E+01	1.10E+00
Zinc	76.7	0	76.7	5.04686	25	250	2.02E-01	2.02E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Red Fox
(Less Conservative Inputs)

Body Weight	5.0000000 kg
Food Ingestion Rate	0.3200000 kg/day
Water Ingestion Rate	0.2752000 L/day
Soil Ingestion Rate	0.0090000 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.007896	0.1833	1.833	4.31E-02	4.31E-03
amino-Dinitrotoluene	0.19	0	0.19	0.012502	1.76	17.63	7.10E-03	7.09E-04
Trinitrotoluene,2,4,6-	0.14	0	0.14	0.009212	3	30	3.07E-03	3.07E-04
Aluminum	5623.85	0	5623.85	370.04933	1.93	19.3	1.92E+02	1.92E+01
Antimony	0.43	0	0.43	0.028294	0.035	0.35	8.08E-01	8.08E-02
Beryllium	0.15	0	0.15	0.00987	1.3	5.4	7.59E-03	1.83E-03
Chromium	11.24	0	11.24	0.739592	0.025	0.25	2.96E+01	2.96E+00
Copper	45.5	0	45.5	2.9939	1	10	2.99E+00	2.99E-01
Iron	7827.69	0	7827.69	515.062002	50	500	1.03E+01	1.03E+00
Lead	25.88	0	25.88	1.702904	0.15	1.5	1.14E+01	1.14E+00
Mercury	0.21	0	0.21	0.013818	0.01	0.5	1.38E+00	2.76E-02
Nickel	4.6	0	4.6	0.30268	62.5	625	4.84E-03	4.84E-04
Silver	6.67	0	6.67	0.438886	1.81	18.1	2.42E-01	2.42E-02
Vanadium	12.8	0	12.8	0.84224	0.2	2	4.21E+00	4.21E-01
Zinc	42.47	0	42.47	2.794526	25	250	1.12E-01	1.12E-02

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Short-Tailed Shrew
(Conservative Inputs)

Body Weight	0.0150000 kg
Food Ingestion Rate	0.0093000 kg/day
Water Ingestion Rate	0.0033450 L/day
Soil Ingestion Rate	0.0009672 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.0821376	0.54	1.833	1.52E-01	4.48E-02
amino-Dinitrotoluene	0.59	0	0.59	0.4038432	1.76	17.63	2.29E-01	2.29E-02
Trinitrotoluene,2,4,6-	0.37	0	0.37	0.2532576	7.5	35.7	3.38E-02	7.09E-03
Aluminum	10300	0	10300	7050.144	1.93	19.3	3.65E+03	3.65E+02
Antimony	1	0	1	0.68448	0.035	0.35	1.96E+01	1.96E+00
Beryllium	0.47	0	0.47	0.3217056	1.3	5.4	2.47E-01	5.96E-02
Chromium	48.9	0	48.9	33.471072	0.025	0.25	1.34E+03	1.34E+02
Copper	220	0	220	150.5856	1	10	1.51E+02	1.51E+01
Iron	19300	0	19300	13210.464	50	500	2.64E+02	2.64E+01
Lead	48.5	0	48.5	33.19728	0.15	1.5	2.21E+02	2.21E+01
Mercury	1.6	0	1.6	1.095168	0.05	0.5	2.19E+01	2.19E+00
Nickel	9.2	0	9.2	6.297216	62.5	625	1.01E-01	1.01E-02
Silver	28	0	28	19.16544	1.81	18.1	1.06E+01	1.06E+00
Vanadium	33.4	0	33.4	22.861632	0.2	2	1.14E+02	1.14E+01
Zinc	76.7	0	76.7	52.499616	25	250	2.10E+00	2.10E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Short-Tailed Shrew
(Conservative Inputs)

Body Weight	0.0150000 kg
Food Ingestion Rate	0.0093000 kg/day
Water Ingestion Rate	0.0033450 L/day
Soil Ingestion Rate	0.0009672 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalat	0.12	0	0.12	0.0821376	0.1833	1.833	4.48E-01	4.48E-02
amino-Dinitrotoluene	0.19	0	0.19	0.1300512	1.76	17.63	7.39E-02	7.38E-03
Trinitrotoluene,2,4,6-	0.14	0	0.14	0.0958272	7.5	35.7	1.28E-02	2.68E-03
Aluminum	5623.85	0	5623.85	3849.412848	1.93	19.3	1.99E+03	1.99E+02
Antimony	0.43	0	0.43	0.2943264	0.035	0.35	8.41E+00	8.41E-01
Beryllium	0.15	0	0.15	0.102672	1.3	5.4	7.90E-02	1.90E-02
Chromium	11.24	0	11.24	7.6935552	0.025	0.25	3.08E+02	3.08E+01
Copper	45.5	0	45.5	31.14384	1	10	3.11E+01	3.11E+00
Iron	7827.69	0	7827.69	5357.897251	50	500	1.07E+02	1.07E+01
Lead	25.88	0	25.88	17.7143424	0.15	1.5	1.18E+02	1.18E+01
Mercury	0.21	0	0.21	0.1437408	0.05	0.5	2.87E+00	2.87E-01
Nickel	4.6	0	4.6	3.148608	62.5	625	5.04E-02	5.04E-03
Silver	6.67	0	6.67	4.5654816	1.81	18.1	2.52E+00	2.52E-01
Vanadium	12.8	0	12.8	8.761344	0.2	2	4.38E+01	4.38E+00
Zinc	42.47	0	42.47	29.0698656	25	250	1.16E+00	1.16E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Short-Tailed Shrew
(Less Conservative Inputs)

Body Weight	0.0167980 kg
Food Ingestion Rate	0.0093229 kg/day
Water Ingestion Rate	0.0037459 L/day
Soil Ingestion Rate	0.0009672 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.073509394	0.54	1.833	1.36E-01	4.01E-02
amino-Dinitrotoluene	0.59	0	0.59	0.361421187	1.76	17.63	2.05E-01	2.05E-02
Trinitrotoluene,2,4,6-	0.37	0	0.37	0.226653965	3.4	34	6.67E-02	6.67E-03
Aluminum	10300	0	10300	6309.556316	1.93	19.3	3.27E+03	3.27E+02
Antimony	1	0	1	0.612578283	0.035	0.35	1.75E+01	1.75E+00
Beryllium	0.47	0	0.47	0.287911793	1.3	5.4	2.21E-01	5.33E-02
Chromium	48.9	0	48.9	29.95507805	0.025	0.25	1.20E+03	1.20E+02
Copper	220	0	220	134.7672223	1	10	1.35E+02	1.35E+01
Iron	19300	0	19300	11822.76086	50	500	2.36E+02	2.36E+01
Lead	48.5	0	48.5	29.71004673	0.15	1.5	1.98E+02	1.98E+01
Mercury	1.6	0	1.6	0.980125253	0.05	0.5	1.96E+01	1.96E+00
Nickel	9.2	0	9.2	5.635720205	62.5	625	9.02E-02	9.02E-03
Silver	28	0	28	17.15219193	1.81	18.1	9.48E+00	9.48E-01
Vanadium	33.4	0	33.4	20.46011466	0.2	2	1.02E+02	1.02E+01
Zinc	76.7	0	76.7	46.98475432	25	250	1.88E+00	1.88E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Short-Tailed Shrew
(Less Conservative Inputs)

Body Weight	0.0167980 kg
Food Ingestion Rate	0.0093229 kg/day
Water Ingestion Rate	0.0037459 L/day
Soil Ingestion Rate	0.0009672 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalat	0.12	0	0.12	0.073509394	0.54	1.833	1.36E-01	4.01E-02
amino-Dinitrotoluene	0.19	0	0.19	0.116389874	1.76	17.63	6.61E-02	6.60E-03
Trinitrotoluene,2,4,6-	0.14	0	0.14	0.08576096	3.4	34	2.52E-02	2.52E-03
Aluminum	5623.85	0	5623.85	3445.048378	1.93	19.3	1.78E+03	1.78E+02
Antimony	0.43	0	0.43	0.263408662	0.035	0.35	7.53E+00	7.53E-01
Beryllium	0.15	0	0.15	0.091886742	1.3	5.4	7.07E-02	1.70E-02
Chromium	11.24	0	11.24	6.885379902	0.025	0.25	2.75E+02	2.75E+01
Copper	45.5	0	45.5	27.87231188	1	10	2.79E+01	2.79E+00
Iron	7827.69	0	7827.69	4795.072901	50	500	9.59E+01	9.59E+00
Lead	25.88	0	25.88	15.85352597	0.15	1.5	1.06E+02	1.06E+01
Mercury	0.21	0	0.21	0.128641439	0.05	0.5	2.57E+00	2.57E-01
Nickel	4.6	0	4.6	2.817860102	62.5	625	4.51E-02	4.51E-03
Silver	6.67	0	6.67	4.085897148	1.81	18.1	2.26E+00	2.26E-01
Vanadium	12.8	0	12.8	7.841002024	0.2	2	3.92E+01	3.92E+00
Zinc	42.47	0	42.47	26.01619968	25	250	1.04E+00	1.04E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Meadow Vole
(Conservative Inputs)

Body Weight	0.0170000 kg
Food Ingestion Rate	0.0059500 kg/day
Water Ingestion Rate	0.0035700 L/day
Soil Ingestion Rate	0.0001428 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalat	0.12	0	0.12	0.043008	0.54	1.833	7.96E-02	2.35E-02
amino-Dinitrotoluene	0.59	0	0.59	0.211456	1.76	17.63	1.20E-01	1.20E-02
Trinitrotoluene,2,4,6-	0.37	0	0.37	0.132608	7.5	35.7	1.77E-02	3.71E-03
Aluminum	10300	0	10300	3691.52	1.93	19.3	1.91E+03	1.91E+02
Antimony	1	0	1	0.3584	0.035	0.35	1.02E+01	1.02E+00
Beryllium	0.47	0	0.47	0.168448	1.3	5.4	1.30E-01	3.12E-02
Chromium	48.9	0	48.9	17.52576	0.025	0.25	7.01E+02	7.01E+01
Copper	220	0	220	78.848	1	10	7.88E+01	7.88E+00
Iron	19300	0	19300	6917.12	50	500	1.38E+02	1.38E+01
Lead	48.5	0	48.5	17.3824	0.15	1.5	1.16E+02	1.16E+01
Mercury	1.6	0	1.6	0.57344	0.05	0.5	1.15E+01	1.15E+00
Nickel	9.2	0	9.2	3.29728	62.5	625	5.28E-02	5.28E-03
Silver	28	0	28	10.0352	1.81	18.1	5.54E+00	5.54E-01
Vanadium	33.4	0	33.4	11.97056	0.2	2	5.99E+01	5.99E+00
Zinc	76.7	0	76.7	27.48928	25	250	1.10E+00	1.10E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Meadow Vole
(Conservative Inputs)

Body Weight	0.0170000 kg
Food Ingestion Rate	0.0059500 kg/day
Water Ingestion Rate	0.0035700 L/day
Soil Ingestion Rate	0.0001428 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.043	0.1833	1.833	2.35E-01	2.35E-02
amino-Dinitrotoluene	0.19	0	0.19	0.068	1.76	17.63	3.87E-02	3.86E-03
Trinitrotoluene,2,4,6-	0.14	0	0.14	0.050	7.5	35.7	6.69E-03	1.41E-03
Aluminum	5623.85	0	5623.85	2015.588	1.93	19.3	1.04E+03	1.04E+02
Antimony	0.43	0	0.43	0.154	0.035	0.35	4.40E+00	4.40E-01
Beryllium	0.15	0	0.15	0.054	1.3	5.4	4.14E-02	9.96E-03
Chromium	11.24	0	11.24	4.028	0.025	0.25	1.61E+02	1.61E+01
Copper	45.5	0	45.5	16.307	1	10	1.63E+01	1.63E+00
Iron	7827.69	0	7827.69	2805.444	50	500	5.61E+01	5.61E+00
Lead	25.88	0	25.88	9.275	0.15	1.5	6.18E+01	6.18E+00
Mercury	0.21	0	0.21	0.075	0.05	0.5	1.51E+00	1.51E-01
Nickel	4.6	0	4.6	1.649	62.5	625	2.64E-02	2.64E-03
Silver	6.67	0	6.67	2.391	1.81	18.1	1.32E+00	1.32E-01
Vanadium	12.8	0	12.8	4.588	0.2	2	2.29E+01	2.29E+00
Zinc	42.47	0	42.47	15.221	25	250	6.09E-01	6.09E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Meadow Vole
(Less Conservative Inputs)

Body Weight	0.0328600 kg
Food Ingestion Rate	0.0106795 kg/day
Water Ingestion Rate	0.0057505 L/day
Soil Ingestion Rate	0.0002563 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.039936	0.54	1.833	7.40E-02	2.18E-02
amino-Dinitrotoluene	0.59	0	0.59	0.196352	1.76	17.63	1.12E-01	1.11E-02
Trinitrotoluene,2,4,6-	0.37	0	0.37	0.123136	2.6	26	4.74E-02	4.74E-03
Aluminum	10300	0	10300	3427.84	1.93	19.3	1.78E+03	1.78E+02
Antimony	1	0	1	0.3328	0.035	0.35	9.51E+00	9.51E-01
Beryllium	0.47	0	0.47	0.156416	1.3	5.4	1.20E-01	2.90E-02
Chromium	48.9	0	48.9	16.27392	0.025	0.25	6.51E+02	6.51E+01
Copper	220	0	220	73.216	1	10	7.32E+01	7.32E+00
Iron	19300	0	19300	6423.04	50	500	1.28E+02	1.28E+01
Lead	48.5	0	48.5	16.1408	0.15	1.5	1.08E+02	1.08E+01
Mercury	1.6	0	1.6	0.53248	0.05	0.5	1.06E+01	1.06E+00
Nickel	9.2	0	9.2	3.06176	62.5	625	4.90E-02	4.90E-03
Silver	28	0	28	9.3184	1.81	18.1	5.15E+00	5.15E-01
Vanadium	33.4	0	33.4	11.11552	0.2	2	5.56E+01	5.56E+00
Zinc	76.7	0	76.7	25.52576	25	250	1.02E+00	1.02E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Meadow Vole
(Less Conservative Inputs)

Body Weight	0.0328600 kg
Food Ingestion Rate	0.0106795 kg/day
Water Ingestion Rate	0.0057505 L/day
Soil Ingestion Rate	0.0002563 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.12	0.040	0.54	1.833	7.40E-02	2.18E-02
amino-Dinitrotoluene	0.19	0	0.19	0.063	1.76	17.63	3.59E-02	3.59E-03
Trinitrotoluene,2,4,6-	0.14	0	0.14	0.047	2.6	26	1.79E-02	1.79E-03
Aluminum	5623.85	0	5623.85	1871.617	1.93	19.3	9.70E+02	9.70E+01
Antimony	0.43	0	0.43	0.143	0.035	0.35	4.09E+00	4.09E-01
Beryllium	0.15	0	0.15	0.050	1.3	5.4	3.84E-02	9.24E-03
Chromium	11.24	0	11.24	3.741	0.025	0.25	1.50E+02	1.50E+01
Copper	45.5	0	45.5	15.142	1	10	1.51E+01	1.51E+00
Iron	7827.69	0	7827.69	2605.055	50	500	5.21E+01	5.21E+00
Lead	25.88	0	25.88	8.613	0.15	1.5	5.74E+01	5.74E+00
Mercury	0.21	0	0.21	0.070	0.05	0.5	1.40E+00	1.40E-01
Nickel	4.6	0	4.6	1.531	62.5	625	2.45E-02	2.45E-03
Silver	6.67	0	6.67	2.220	1.81	18.1	1.23E+00	1.23E-01
Vanadium	12.8	0	12.8	4.260	0.2	2	2.13E+01	2.13E+00
Zinc	42.47	0	42.47	14.134	25	250	5.65E-01	5.65E-02

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Deer Mouse
(Conservative Inputs)

Body Weight	0.0150000 kg
Food Ingestion Rate	0.0028500 kg/day
Water Ingestion Rate	0.0019000 L/day
Soil Ingestion Rate	0.0000700 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invetebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.048	0.072	0.02336	0.1833	1.833	1.27E-01	1.27E-02
amino-Dinitrotoluene	0.59	0	0.236	0.354	0.114853333	1.76	17.63	6.53E-02	6.51E-03
Trinitrotoluene,2,4,6-	0.37	0	0.148	0.222	0.072026667	7.5	35.7	9.60E-03	2.02E-03
Aluminum	10300	0	4120	6180	2005.066667	1.93	19.3	1.04E+03	1.04E+02
Antimony	1	0	0.4	0.6	0.194666667	0.035	0.35	5.56E+00	5.56E-01
Beryllium	0.47	0	0.188	0.282	0.091493333	1.3	5.4	7.04E-02	1.69E-02
Chromium	48.9	0	19.56	29.34	9.5192	0.025	0.25	3.81E+02	3.81E+01
Copper	220	0	88	132	42.82666667	1	10	4.28E+01	4.28E+00
Iron	19300	0	7720	11580	3757.066667	50	500	7.51E+01	7.51E+00
Lead	48.5	0	19.4	29.1	9.441333333	0.15	1.5	6.29E+01	6.29E+00
Mercury	1.6	0	0.64	0.96	0.311466667	0.05	0.5	6.23E+00	6.23E-01
Nickel	9.2	0	3.68	5.52	1.790933333	62.5	625	2.87E-02	2.87E-03
Silver	28	0	11.2	16.8	5.450666667	1.81	18.1	3.01E+00	3.01E-01
Vanadium	33.4	0	13.36	20.04	6.501866667	0.2	2	3.25E+01	3.25E+00
Zinc	76.7	0	30.68	46.02	14.93093333	25	250	5.97E-01	5.97E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Deer Mouse
(Conservative Inputs)

Body Weight	0.0150000 kg
Food Ingestion Rate	0.0028500 kg/day
Water Ingestion Rate	0.0019000 L/day
Soil Ingestion Rate	0.0000700 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertabrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.048	0.072	0.02336	0.1833	1.833	1.27E-01	1.27E-02
amino-Dinitrotoluene	0.19	0	0.076	0.114	0.03698667	1.76	17.63	2.10E-02	2.10E-03
Trinitrotoluene,2,4,6-	0.14	0	0.056	0.084	0.02725333	7.5	35.7	3.63E-03	7.63E-04
Aluminum	5623.85	0	2249.54	3374.31	1094.77613	1.93	19.3	5.67E+02	5.67E+01
Antimony	0.43	0	0.172	0.258	0.08370667	0.035	0.35	2.39E+00	2.39E-01
Beryllium	0.15	0	0.06	0.09	0.0292	1.3	5.4	2.25E-02	5.41E-03
Chromium	11.24	0	4.496	6.744	2.18805333	0.025	0.25	8.75E+01	8.75E+00
Copper	45.5	0	18.2	27.3	8.85733333	1	10	8.86E+00	8.86E-01
Iron	7827.69	0	3131.076	4696.614	1523.79032	50	500	3.05E+01	3.05E+00
Lead	25.88	0	10.352	15.528	5.03797333	0.15	1.5	3.36E+01	3.36E+00
Mercury	0.21	0	0.084	0.126	0.04088	0.05	0.5	8.18E-01	8.18E-02
Nickel	4.6	0	1.84	2.76	0.89546667	62.5	625	1.43E-02	1.43E-03
Silver	6.67	0	2.668	4.002	1.29842667	1.81	18.1	7.17E-01	7.17E-02
Vanadium	12.8	0	5.12	7.68	2.49173333	0.2	2	1.25E+01	1.25E+00
Zinc	42.47	0	16.988	25.482	8.26749333	25	250	3.31E-01	3.31E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Deer Mouse
(Less Conservative Inputs)

Body Weight	0.0193600 kg
Food Ingestion Rate	0.0037752 kg/day
Water Ingestion Rate	0.0036784 L/day
Soil Ingestion Rate	0.0000755 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invetebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalat	0.12	0	0.048	0.072	0.02386798	0.1833	1.833	1.30E-01	1.30E-02
amino-Dinitrotoluene	0.59	0	0.236	0.354	0.11735088	1.76	17.63	6.67E-02	6.66E-03
Trinitrotoluene,2,4,6-	0.37	0	0.148	0.222	0.07359292	3	30	2.45E-02	2.45E-03
Aluminum	10300	0	4120	6180	2048.66787	1.93	19.3	1.06E+03	1.06E+02
Antimony	1	0	0.4	0.6	0.19889979	0.035	0.35	5.68E+00	5.68E-01
Beryllium	0.47	0	0.188	0.282	0.0934829	1.3	5.4	7.19E-02	1.73E-02
Chromium	48.9	0	19.56	29.34	9.7261999	0.025	0.25	3.89E+02	3.89E+01
Copper	220	0	88	132	43.7579545	1	10	4.38E+01	4.38E+00
Iron	19300	0	7720	11580	3838.76601	50	500	7.68E+01	7.68E+00
Lead	48.5	0	19.4	29.1	9.64663998	0.15	1.5	6.43E+01	6.43E+00
Mercury	1.6	0	0.64	0.96	0.31823967	0.05	0.5	6.36E+00	6.36E-01
Nickel	9.2	0	3.68	5.52	1.8298781	62.5	625	2.93E-02	2.93E-03
Silver	28	0	11.2	16.8	5.56919421	1.81	18.1	3.08E+00	3.08E-01
Vanadium	33.4	0	13.36	20.04	6.6432531	0.2	2	3.32E+01	3.32E+00
Zinc	76.7	0	30.68	46.02	15.2556142	25	250	6.10E-01	6.10E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Deer Mouse
(Less Conservative Inputs)

Body Weight	0.0193600 kg
Food Ingestion Rate	0.0037752 kg/day
Water Ingestion Rate	0.0036784 L/day
Soil Ingestion Rate	0.0000755 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertabrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.12	0	0.048	0.072	0.02386798	0.1833	1.833	1.30E-01	1.30E-02
amino-Dinitrotoluene	0.19	0	0.076	0.114	0.03779096	1.76	17.63	2.15E-02	2.14E-03
Trinitrotoluene,2,4,6-	0.14	0	0.056	0.084	0.02784597	3	30	9.28E-03	9.28E-04
Aluminum	5623.85	0	2249.54	3374.31	1118.5826	1.93	19.3	5.80E+02	5.80E+01
Antimony	0.43	0	0.172	0.258	0.08552691	0.035	0.35	2.44E+00	2.44E-01
Beryllium	0.15	0	0.06	0.09	0.02983497	1.3	5.4	2.29E-02	5.52E-03
Chromium	11.24	0	4.496	6.744	2.23563368	0.025	0.25	8.94E+01	8.94E+00
Copper	45.5	0	18.2	27.3	9.0499406	1	10	9.05E+00	9.05E-01
Iron	7827.69	0	3131.076	4696.614	1556.92592	50	500	3.11E+01	3.11E+00
Lead	25.88	0	10.352	15.528	5.14752665	0.15	1.5	3.43E+01	3.43E+00
Mercury	0.21	0	0.084	0.126	0.04176896	0.05	0.5	8.35E-01	8.35E-02
Nickel	4.6	0	1.84	2.76	0.91493905	62.5	625	1.46E-02	1.46E-03
Silver	6.67	0	2.668	4.002	1.32666162	1.81	18.1	7.33E-01	7.33E-02
Vanadium	12.8	0	5.12	7.68	2.54591736	0.2	2	1.27E+01	1.27E+00
Zinc	42.47	0	16.988	25.482	8.44727423	25	250	3.38E-01	3.38E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

APPENDIX M.3
SITE 11 AQUATIC RECEPTOR MODELS

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Largemouth Bass
(Conservative Inputs)

Body Weight	1.1000000 kg
Food Ingestion Rate	0.1330000 kg/day
Water Ingestion Rate	0.0000000 L/day (No Data)
Sediment Ingestion Rate	0.0000000 kg/day (No Data)

Maximum Concentrations

Ecological Contaminant of Concern	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Fish Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Aluminum	5850	0	2925	2925	707.3181818	NA	NA	NA	NA
Cobalt	4.1	0	2.05	2.05	0.495727273	NA	NA	NA	NA
Silver	1.2	0	0.6	0.6	0.145090909	NA	NA	NA	NA
Vanadium	14.6	0	7.3	7.3	1.765272727	NA	NA	NA	NA

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Largemouth Bass
(Conservative Inputs)

Body Weight	1.1000000 kg
Food Ingestion Rate	0.1330000 kg/day
Water Ingestion Rate	0.0000000 L/day (No Data)
Sediment Ingestion Rate	0.0000000 kg/day (No Data)

Mean Concentrations

Ecological Contaminant of Concern	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Fish Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Aluminum	4122	0	2061	2061	498.3872727	NA	NA	NA	NA
Cobalt	2.24	0	1.12	1.12	0.270836364	NA	NA	NA	NA
Silver	0.59	0	0.295	0.295	0.071336364	NA	NA	NA	NA
Vanadium	9.52	0	4.76	4.76	1.151054545	NA	NA	NA	NA

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Largemouth Bass
(Less Conservative Inputs)

Body Weight	1.1000000 kg
Food Ingestion Rate	0.1330000 kg/day
Water Ingestion Rate	0.0000000 L/day (No Data)
Sediment Ingestion Rate	0.0000000 kg/day (No Data)

Maximum Concentrations

Ecological Contaminant of Concern	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Fish Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Aluminum	5850	0	2925	2925	707.3181818	NA	NA	NA	NA
Cobalt	4.1	0	2.05	2.05	0.495727273	NA	NA	NA	NA
Silver	1.2	0	0.6	0.6	0.145090909	NA	NA	NA	NA
Vanadium	14.6	0	7.3	7.3	1.765272727	NA	NA	NA	NA

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Largemouth Bass
(Less Conservative Inputs)

Body Weight	1.1000000 kg
Food Ingestion Rate	0.1330000 kg/day
Water Ingestion Rate	0.0000000 L/day (No Data)
Sediment Ingestion Rate	0.0000000 kg/day (No Data)

Mean Concentrations

Ecological Contaminant of Concern	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Fish Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Aluminum	4122	0	2061	2061	498.3872727	NA	NA	NA	NA
Cobalt	2.24	0	1.12	1.12	0.270836364	NA	NA	NA	NA
Silver	0.59	0	0.295	0.295	0.071336364	NA	NA	NA	NA
Vanadium	9.52	0	4.76	4.76	1.151054545	NA	NA	NA	NA

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Great Blue Heron
(Conservative Inputs)

Body Weight	2.2290000 kg
Food Ingestion Rate	0.6000000 kg/day
Water Ingestion Rate	0.1200000 L/day
Sediment Ingestion Rate	0.0540000 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Fish Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Aluminum	5850	0	5850	1716.419919	109.7	1097	1.56E+01	1.56E+00
Cobalt	4.1	0	4.1	1.202960969	1	10	1.20E+00	1.20E-01
Silver	1.2	0	1.2	0.352086137	NA	NA	NA	NA
Vanadium	14.6	0	14.6	4.28371467	11.38	113.8	3.76E-01	3.76E-02

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Great Blue Heron
(Conservative Inputs)

Body Weight	2.2290000 kg
Food Ingestion Rate	0.6000000 kg/day
Water Ingestion Rate	0.1200000 L/day
Sediment Ingestion Rate	0.0540000 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Fish Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Aluminum	4122	0	4122	1209.415882	109.7	1097	1.10E+01	1.10E+00
Cobalt	2.24	0	2.24	0.657227456	1	10	6.57E-01	6.57E-02
Silver	0.59	0	0.59	0.173109017	0	0	NA	NA
Vanadium	9.52	0	9.52	2.793216689	11.38	113.8	2.45E-01	2.45E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Great Blue Heron
(Less Conservative Inputs)

Body Weight	2.2680000 kg
Food Ingestion Rate	0.4082500 kg/day
Water Ingestion Rate	0.1020600 L/day
Sediment Ingestion Rate	0.0360000 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Fish Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Aluminum	5850	0	5850	1145.882937	109.7	1097	1.04E+01	1.04E+00
Cobalt	4.1	0	4.1	0.803097443	1	10	8.03E-01	8.03E-02
Silver	1.2	0	1.2	0.23505291	NA	NA	NA	NA
Vanadium	14.6	0	14.6	2.859810406	11.38	113.8	2.51E-01	2.51E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Great Blue Heron
(Less Conservative Inputs)

Body Weight	2.2680000 kg
Food Ingestion Rate	0.4082500 kg/day
Water Ingestion Rate	0.1020600 L/day
Sediment Ingestion Rate	0.0360000 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Fish Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Aluminum	4122	0	4122	807.406746	109.7	1097	7.36E+00	7.36E-01
Cobalt	2.24	0	2.24	0.438765432	1	10	4.39E-01	4.39E-02
Silver	0.59	0	0.59	0.115567681	0	0	NA	NA
Vanadium	9.52	0	9.52	1.864753086	11.38	113.8	1.64E-01	1.64E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Bullfrog
(Conservative Inputs)

Body Weight	0.1428000 kg
Food Ingestion Rate	0.0101388 kg/day
Water Ingestion Rate	0.0000000 L/day (No Data)
Sediment Ingestion Rate	0.0005982 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Aluminum	5850	0	5850	439.8556418	NA	NA	NA	NA
Cobalt	4.1	0	4.1	0.308274894	NA	NA	NA	NA
Silver	1.2	0	1.2	0.090226798	NA	NA	NA	NA
Vanadium	14.6	0	14.6	1.09775938	NA	NA	NA	NA

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Bullfrog
(Conservative Inputs)

Body Weight	0.1428000 kg
Food Ingestion Rate	0.0101388 kg/day
Water Ingestion Rate	0.0000000 L/day (No Data)
Sediment Ingestion Rate	0.0005982 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Aluminum	4122	0	4122	309.9290522	NA	NA	NA	NA
Cobalt	2.24	0	2.24	0.168423357	NA	NA	NA	NA
Silver	0.59	0	0.59	0.044361509	NA	NA	NA	NA
Vanadium	9.52	0	9.52	0.715799267	NA	NA	NA	NA

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Bullfrog
(Less Conservative Inputs)

Body Weight	0.1959000 kg
Food Ingestion Rate	0.0099419 kg/day
Water Ingestion Rate	0.0000000 L/day (No Data)
Sediment Ingestion Rate	0.0005866 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Aluminum	5850	0	5850	314.4039051	NA	NA	NA	NA
Cobalt	4.1	0	4.1	0.220351455	NA	NA	NA	NA
Silver	1.2	0	1.2	0.064493109	NA	NA	NA	NA
Vanadium	14.6	0	14.6	0.784666156	NA	NA	NA	NA

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 11
Naval Weapons Station Yorktown
Yorktown, Virginia

Bullfrog
(Less Conservative Inputs)

Body Weight	0.1959000 kg
Food Ingestion Rate	0.0099419 kg/day
Water Ingestion Rate	0.0000000 L/day (No Data)
Sediment Ingestion Rate	0.0005866 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Aluminum	4122	0	4122	221.5338285	NA	NA	NA	NA
Cobalt	2.24	0	2.24	0.120387136	NA	NA	NA	NA
Silver	0.59	0	0.59	0.031709112	NA	NA	NA	NA
Vanadium	9.52	0	9.52	0.511645329	NA	NA	NA	NA

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

APPENDIX M.4
SITE 17 - SOIL AREA OF CONCERN
TERRESTRIAL RECEPTOR MODELS

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

American Woodcock
(Conservative Inputs)

Body Weight	0.1650000 kg
Food Ingestion Rate	0.0830000 kg/day
Water Ingestion Rate	0.0169380 L/day
Soil Ingestion Rate	0.0075000 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworm Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.43	0	0.43	0.235848485	10	100	2.36E-02	2.36E-03
Acenaphthylene	2.8	0	2.8	1.535757576	10	100	1.54E-01	1.54E-02
Anthracene	1.1	0	1.1	0.603333333	10	100	6.03E-02	6.03E-03
Benzo(a)anthracene	6.5	0	6.5	3.565151515	10	100	3.57E-01	3.57E-02
Benzo(a)pyrene	9.5	0	9.5	5.210606061	10	100	5.21E-01	5.21E-02
Benzo(b)fluoranthene	8.5	0	8.5	4.662121212	10	100	4.66E-01	4.66E-02
Benzo(g,h,i)perylene	5	0	5	2.742424242	10	100	2.74E-01	2.74E-02
Benzo(k)fluoranthene	3	0	3	1.645454545	10	100	1.65E-01	1.65E-02
Bis(2-ethylhexyl)phthalate	0.17	0	0.17	0.093242424	1.11	11.1	8.40E-02	8.40E-03
Carbazole	0.54	0	0.54	0.296181818	10	100	2.96E-02	2.96E-03
Chrysene	7.6	0	7.6	4.168484848	10	100	4.17E-01	4.17E-02
Dibenzo(a,h)anthracene	1.7	0	1.7	0.932424242	10	100	9.32E-02	9.32E-03
Dibenzofuran	0.38	0	0.38	0.208424242	0	0	NA	NA
Fluoranthene	5.9	0	5.9	3.236060606	10	100	3.24E-01	3.24E-02
Fluorene	0.51	0	0.51	0.279727273	10	100	2.80E-02	2.80E-03
Indeno(1,2,3-cd)pyrene	4.3	0	4.3	2.358484848	10	100	2.36E-01	2.36E-02
Methylnaphthalene,2-	0.094	0	0.094	0.051557576	0	0	NA	NA
Naphthalene	0.39	0	0.39	0.213909091	0.01	0.1	NA	NA
Phenanthrene	4.4	0	4.4	2.413333333	10	100	2.41E-01	2.41E-02
Pyrene	9.5	0	9.5	5.210606061	10	100	5.21E-01	5.21E-02
Aluminum	5230	0	5230	2868.575758	109.7	1097	2.61E+01	2.61E+00
Beryllium	0.29	0	0.29	0.159060606	10	0	NA	NA
Chromium	9.4	0	9.4	5.155757576	0.1	1	5.16E+01	5.16E+00
Cyanide	0.19	0	0.19	0.104212121	4.5	45	2.32E-02	2.32E-03
Iron	7380	0	7380	4047.818182	100	1000	4.05E+01	4.05E+00
Lead	29	0	29	15.90606061	0.3	3	5.30E+01	5.30E+00
Mercury	0.13	0	0.13	0.07130303	0.01	0.1	7.13E+00	7.13E-01
Nickel	4.5	0	4.5	2.468181818	0	0	NA	NA
Vanadium	14.6	0	14.6	8.007878788	11.38	113.8	7.04E-01	7.04E-02
Zinc	124	0	124	68.01212121	13.9	139	4.89E+00	4.89E-01

NA - Not Applicable
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

American Woodcock
(Conservative Inputs)

Body Weight	0.1650000 kg
Food Ingestion Rate	0.0830000 kg/day
Water Ingestion Rate	0.0169380 L/day
Soil Ingestion Rate	0.0075000 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworm Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.2575	0	0.2575	0.141234848	10	100	1.41E-02	1.41E-03
Acenaphthylene	1.14875	0	1.14875	0.63007197	10	100	6.30E-02	6.30E-03
Anthracene	0.605	0	0.605	0.331833333	10	100	3.32E-02	3.32E-03
Benzo(a)anthracene	2.365	0	2.365	1.297166667	10	100	1.30E-01	1.30E-02
Benzo(a)pyrene	3.235	0	3.235	1.774348485	10	100	1.77E-01	1.77E-02
Benzo(b)fluoranthene	3.1975	0	3.1975	1.753780303	10	100	1.75E-01	1.75E-02
Benzo(g,h,i)perylene	1.71175	0	1.71175	0.938868939	10	100	9.39E-02	9.39E-03
Benzo(k)fluoranthene	1.0785	0	1.0785	0.591540909	10	100	5.92E-02	5.92E-03
Bis(2-ethylhexyl)phthalate	0.24375	0	0.24375	0.133693182	1.11	11.1	1.20E-01	1.20E-02
Carbazole	0.28	0	0.28	0.153575758	10	100	1.54E-02	1.54E-03
Chrysene	2.745	0	2.745	1.505590909	10	100	1.51E-01	1.51E-02
Dibenzo(a,h)anthracene	0.63	0	0.63	0.345545455	10	100	3.46E-02	3.46E-03
Dibenzofuran	0.3975	0	0.3975	0.218022727	0	0	NA	NA
Fluoranthene	2.8525	0	2.8525	1.56455303	10	100	1.56E-01	1.56E-02
Fluorene	0.3075	0	0.3075	0.168659091	10	100	1.69E-02	1.69E-03
Indeno(1,2,3-cd)pyrene	1.48675	0	1.48675	0.815459848	10	100	8.15E-02	8.15E-03
Methylnaphthalene,2-	0.2855	0	0.2855	0.156592424	0	0	NA	NA
Naphthalene	0.4	0	0.4	0.219393939	0.01	0.1	NA	NA
Phenanthrene	1.8825	0	1.8825	1.032522727	10	100	1.03E-01	1.03E-02
Pyrene	3.5925	0	3.5925	1.970431818	10	100	1.97E-01	1.97E-02
Aluminum	4675	0	4675	2564.166667	109.7	1097	2.34E+01	2.34E+00
Beryllium	0.17	0	0.17	0.093242424	10	0	NA	NA
Chromium	7.8	0	7.8	4.278181818	0.1	1	4.28E+01	4.28E+00
Cyanide	0.12	0	0.12	0.065818182	4.5	45	1.46E-02	1.46E-03
Iron	5647.5	0	5647.5	3097.568182	100	1000	3.10E+01	3.10E+00
Lead	24.83	0	24.83	13.61887879	0.3	3	4.54E+01	4.54E+00
Mercury	0.08	0	0.08	0.043878788	0.01	0.1	4.39E+00	4.39E-01
Nickel	3.65	0	3.65	2.001969697	0	0	NA	NA
Vanadium	12.15	0	12.15	6.664090909	11.38	113.8	5.86E-01	5.86E-02
Zinc	51.38	0	51.38	28.18115152	13.9	139	2.03E+00	2.03E-01

NA - Not Applicable
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

American Woodcock
(Less Conservative Inputs)

Body Weight	0.1693800 kg
Food Ingestion Rate	0.1304226 kg/day
Water Ingestion Rate	0.0169380 L/day
Soil Ingestion Rate	0.0135640 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworm Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.43	0	0.43	0.365534399	10	100	3.66E-02	3.66E-03
Acenaphthylene	2.8	0	2.8	2.380223993	10	100	2.38E-01	2.38E-02
Anthracene	1.1	0	1.1	0.935087997	10	100	9.35E-02	9.35E-03
Benzo(a)anthracene	6.5	0	6.5	5.525519985	10	100	5.53E-01	5.53E-02
Benzo(a)pyrene	9.5	0	9.5	8.075759978	10	100	8.08E-01	8.08E-02
Benzo(b)fluoranthene	8.5	0	8.5	7.22567998	10	100	7.23E-01	7.23E-02
Benzo(g,h,i)perylene	5	0	5	4.250399988	10	100	4.25E-01	4.25E-02
Benzo(k)fluoranthene	3	0	3	2.550239993	10	100	2.55E-01	2.55E-02
Bis(2-ethylhexyl)phthalate	0.17	0	0.17	0.1445136	1.11	11.1	1.30E-01	1.30E-02
Carbazole	0.54	0	0.54	0.459043199	10	100	4.59E-02	4.59E-03
Chrysene	7.6	0	7.6	6.460607982	10	100	6.46E-01	6.46E-02
Dibenzo(a,h)anthracene	1.7	0	1.7	1.445135996	10	100	1.45E-01	1.45E-02
Dibenzofuran	0.38	0	0.38	0.323030399	0	0	NA	NA
Fluoranthene	5.9	0	5.9	5.015471986	10	100	5.02E-01	5.02E-02
Fluorene	0.51	0	0.51	0.433540799	10	100	4.34E-02	4.34E-03
Indeno(1,2,3-cd)pyrene	4.3	0	4.3	3.65534399	10	100	3.66E-01	3.66E-02
Methylnaphthalene,2-	0.094	0	0.094	0.07990752	0.01	0.1	NA	NA
Naphthalene	0.39	0	0.39	0.331531199	0.01	0.1	NA	NA
Phenanthrene	4.4	0	4.4	3.74035199	10	100	3.74E-01	3.74E-02
Pyrene	9.5	0	9.5	8.075759978	10	100	8.08E-01	8.08E-02
Aluminum	5230	0	5230	4445.918388	109.7	1097	4.05E+01	4.05E+00
Beryllium	0.29	0	0.29	0.246523199	10	0	NA	NA
Chromium	9.4	0	9.4	7.990751978	0.1	1	7.99E+01	7.99E+00
Cyanide	0.19	0	0.19	0.1615152	4.5	45	3.59E-02	3.59E-03
Iron	7380	0	7380	6273.590383	100	1000	6.27E+01	6.27E+00
Lead	29	0	29	24.65231993	0.3	3	8.22E+01	8.22E+00
Mercury	0.13	0	0.13	0.1105104	0.01	0.1	1.11E+01	1.11E+00
Nickel	4.5	0	4.5	3.825359989	0	0	NA	NA
Vanadium	14.6	0	14.6	12.41116797	11.38	113.8	1.09E+00	1.09E-01
Zinc	124	0	124	105.4099197	13.9	139	7.58E+00	7.58E-01

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

American Woodcock
(Less Conservative Inputs)

Body Weight	0.1693800 kg
Food Ingestion Rate	0.1304226 kg/day
Water Ingestion Rate	0.0169380 L/day
Soil Ingestion Rate	0.0135640 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworm Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.2575	0	0.2575	0.218895599	10	100	2.19E-02	2.19E-03
Acenaphthylene	1.14875	0	1.14875	0.976529397	10	100	9.77E-02	9.77E-03
Anthracene	0.605	0	0.605	0.514298399	10	100	5.14E-02	5.14E-03
Benzo(a)anthracene	2.365	0	2.365	2.010439194	10	100	2.01E-01	2.01E-02
Benzo(a)pyrene	3.235	0	3.235	2.750008792	10	100	2.75E-01	2.75E-02
Benzo(b)fluoranthene	3.1975	0	3.1975	2.718130792	10	100	2.72E-01	2.72E-02
Benzo(g,h,i)perylene	1.71175	0	1.71175	1.455124436	10	100	1.46E-01	1.46E-02
Benzo(k)fluoranthene	1.0785	0	1.0785	0.916811277	10	100	9.17E-02	9.17E-03
Bis(2-ethylhexyl)phthalate	0.24375	0	0.24375	0.207206999	1.11	11.1	1.87E-01	1.87E-02
Carbazole	0.28	0	0.28	0.238022399	10	100	2.38E-02	2.38E-03
Chrysene	2.745	0	2.745	2.333469594	10	100	2.33E-01	2.33E-02
Dibenzo(a,h)anthracene	0.63	0	0.63	0.535550399	10	100	5.36E-02	5.36E-03
Dibenzofuran	0.3975	0	0.3975	0.337906799	0	0	NA	NA
Fluoranthene	2.8525	0	2.8525	2.424853193	10	100	2.42E-01	2.42E-02
Fluorene	0.3075	0	0.3075	0.261399599	10	100	2.61E-02	2.61E-03
Indeno(1,2,3-cd)pyrene	1.48675	0	1.48675	1.263856436	10	100	1.26E-01	1.26E-02
Methylnaphthalene,2-	0.2855	0	0.2855	0.242697839	0.01	0.1	NA	NA
Naphthalene	0.4	0	0.4	0.340031999	0.01	0.1	NA	NA
Phenanthrene	1.8825	0	1.8825	1.600275596	10	100	1.60E-01	1.60E-02
Pyrene	3.5925	0	3.5925	3.053912392	10	100	3.05E-01	3.05E-02
Aluminum	4675	0	4675	3974.123989	109.7	1097	3.62E+01	3.62E+00
Beryllium	0.17	0	0.17	0.1445136	10	0	NA	NA
Chromium	7.8	0	7.8	6.630623982	0.1	1	6.63E+01	6.63E+00
Cyanide	0.12	0	0.12	0.1020096	4.5	45	2.27E-02	2.27E-03
Iron	5647.5	0	5647.5	4800.826787	100	1000	4.80E+01	4.80E+00
Lead	24.83	0	24.83	21.10748634	0.3	3	7.04E+01	7.04E+00
Mercury	0.08	0	0.08	0.0680064	0.01	0.1	6.80E+00	6.80E-01
Nickel	3.65	0	3.65	3.102791991	0	0	NA	NA
Vanadium	12.15	0	12.15	10.32847197	11.38	113.8	9.08E-01	9.08E-02
Zinc	51.38	0	51.38	43.67711028	13.9	139	3.14E+00	3.14E-01

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Red-Tailed Hawk
(Conservative Inputs)

Body Weight	0.9570000 kg
Food Ingestion Rate	0.4000000 kg/day
Water Ingestion Rate	0.0564600 L/day
Soil Ingestion Rate	0.0028000 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.43	0	0.43	0.180986416	10	100	1.81E-02	1.81E-03
Acenaphthylene	2.8	0	2.8	1.178516196	10	100	1.18E-01	1.18E-02
Anthracene	1.1	0	1.1	0.462988506	10	100	4.63E-02	4.63E-03
Benzo(a)anthracene	6.5	0	6.5	2.73584117	10	100	2.74E-01	2.74E-02
Benzo(a)pyrene	9.5	0	9.5	3.998537095	10	100	4.00E-01	4.00E-02
Benzo(b)fluoranthene	8.5	0	8.5	3.577638454	10	100	3.58E-01	3.58E-02
Benzo(g,h,i)perylene	5	0	5	2.104493208	10	100	2.10E-01	2.10E-02
Benzo(k)fluoranthene	3	0	3	1.262695925	10	100	1.26E-01	1.26E-02
Bis(2-ethylhexyl)phthalate	0.17	0	0.17	0.071552769	1.11	11.1	6.45E-02	6.45E-03
Carbazole	0.54	0	0.54	0.227285266	10	100	2.27E-02	2.27E-03
Chrysene	7.6	0	7.6	3.198829676	10	100	3.20E-01	3.20E-02
Dibenzo(a,h)anthracene	1.7	0	1.7	0.715527691	10	100	7.16E-02	7.16E-03
Dibenzofuran	0.38	0	0.38	0.159941484	0	0	NA	NA
Fluoranthene	5.9	0	5.9	2.483301985	10	100	2.48E-01	2.48E-02
Fluorene	0.51	0	0.51	0.214658307	10	100	2.15E-02	2.15E-03
Indeno(1,2,3-cd)pyrene	4.3	0	4.3	1.809864159	10	100	1.81E-01	1.81E-02
Methylnaphthalene,2-	0.094	0	0.094	0.039564472	0.01	0.1	NA	NA
Naphthalene	0.39	0	0.39	0.16415047	0.01	0.1	NA	NA
Phenanthrene	4.4	0	4.4	1.851954023	10	100	1.85E-01	1.85E-02
Pyrene	9.5	0	9.5	3.998537095	10	100	4.00E-01	4.00E-02
Aluminum	5230	0	5230	2201.299896	109.7	1097	2.01E+01	2.01E+00
Beryllium	0.29	0	0.29	0.122060606	10	0	NA	NA
Chromium	9.4	0	9.4	3.956447231	0.1	1	3.96E+01	3.96E+00
Cyanide	0.19	0	0.19	0.079970742	4.5	45	1.78E-02	1.78E-03
Iron	7380	0	7380	3106.231975	100	1000	3.11E+01	3.11E+00
Lead	29	0	29	12.20606061	0.3	3	4.07E+01	4.07E+00
Mercury	0.13	0	0.13	0.054716823	0.01	0.1	5.47E+00	5.47E-01
Nickel	4.5	0	4.5	1.894043887	0	0	NA	NA
Vanadium	14.6	0	14.6	6.145120167	11.38	113.8	5.40E-01	5.40E-02
Zinc	124	0	124	52.19143156	13.9	139	3.75E+00	3.75E-01

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Red-Tailed Hawk
(Conservative Inputs)

Body Weight	0.9570000 kg
Food Ingestion Rate	0.4000000 kg/day
Water Ingestion Rate	0.0564600 L/day
Soil Ingestion Rate	0.0028000 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.2575	0	0.2575	0.1083814	10	100	1.08E-02	1.08E-03
Acenaphthylene	1.14875	0	1.14875	0.483507315	10	100	4.84E-02	4.84E-03
Anthracene	0.605	0	0.605	0.254643678	10	100	2.55E-02	2.55E-03
Benzo(a)anthracene	2.365	0	2.365	0.995425287	10	100	9.95E-02	9.95E-03
Benzo(a)pyrene	3.235	0	3.235	1.361607106	10	100	1.36E-01	1.36E-02
Benzo(b)fluoranthene	3.1975	0	3.1975	1.345823406	10	100	1.35E-01	1.35E-02
Benzo(g,h,i)perylene	1.71175	0	1.71175	0.72047325	10	100	7.20E-02	7.20E-03
Benzo(k)fluoranthene	1.0785	0	1.0785	0.453939185	10	100	4.54E-02	4.54E-03
Bis(2-ethylhexyl)phthalate	0.24375	0	0.24375	0.102594044	1.11	11.1	9.24E-02	9.24E-03
Carbazole	0.28	0	0.28	0.11785162	10	100	1.18E-02	1.18E-03
Chrysene	2.745	0	2.745	1.155366771	10	100	1.16E-01	1.16E-02
Dibenzo(a,h)anthracene	0.63	0	0.63	0.265166144	10	100	2.65E-02	2.65E-03
Dibenzofuran	0.3975	0	0.3975	0.16730721	0	0	NA	NA
Fluoranthene	2.8525	0	2.8525	1.200613375	10	100	1.20E-01	1.20E-02
Fluorene	0.3075	0	0.3075	0.129426332	10	100	1.29E-02	1.29E-03
Indeno(1,2,3-cd)pyrene	1.48675	0	1.48675	0.625771055	10	100	6.26E-02	6.26E-03
Methylnaphthalene,2-	0.2855	0	0.2855	0.120166562	0	0	NA	NA
Naphthalene	0.4	0	0.4	0.168359457	0.01	0.1	NA	NA
Phenanthrene	1.8825	0	1.8825	0.792341693	10	100	7.92E-02	7.92E-03
Pyrene	3.5925	0	3.5925	1.51207837	10	100	1.51E-01	1.51E-02
Aluminum	4675	0	4675	1967.701149	109.7	1097	1.79E+01	1.79E+00
Beryllium	0.17	0	0.17	0.071552769	10	0	NA	NA
Chromium	7.8	0	7.8	3.283009404	0.1	1	3.28E+01	3.28E+00
Cyanide	0.12	0	0.12	0.050507837	4.5	45	1.12E-02	1.12E-03
Iron	5647.5	0	5647.5	2377.025078	100	1000	2.38E+01	2.38E+00
Lead	24.83	0	24.83	10.45091327	0.3	3	3.48E+01	3.48E+00
Mercury	0.08	0	0.08	0.033671891	0.01	0.1	3.37E+00	3.37E-01
Nickel	3.65	0	3.65	1.536280042	0	0	NA	NA
Vanadium	12.15	0	12.15	5.113918495	11.38	113.8	4.49E-01	4.49E-02
Zinc	51.38	0	51.38	21.6257722	13.9	139	1.56E+00	1.56E-01

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Red-Tailed Hawk
(Less Conservative Inputs)

Body Weight	1.1340000 kg
Food Ingestion Rate	0.1120000 kg/day
Water Ingestion Rate	0.0646400 L/day
Soil Ingestion Rate	0.0030000 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.43	0	0.43	0.043606702	10	100	4.36E-03	4.36E-04
Acenaphthylene	2.8	0	2.8	0.283950617	10	100	2.84E-02	2.84E-03
Anthracene	1.1	0	1.1	0.111552028	10	100	1.12E-02	1.12E-03
Benzo(a)anthracene	6.5	0	6.5	0.659171076	10	100	6.59E-02	6.59E-03
Benzo(a)pyrene	9.5	0	9.5	0.96340388	10	100	9.63E-02	9.63E-03
Benzo(b)fluoranthene	8.5	0	8.5	0.861992945	10	100	8.62E-02	8.62E-03
Benzo(g,h,i)perylene	5	0	5	0.507054674	10	100	5.07E-02	5.07E-03
Benzo(k)fluoranthene	3	0	3	0.304232804	10	100	3.04E-02	3.04E-03
Bis(2-ethylhexyl)phthalate	0.17	0	0.17	0.017239859	1.11	11.1	1.55E-02	1.55E-03
Carbazole	0.54	0	0.54	0.054761905	10	100	5.48E-03	5.48E-04
Chrysene	7.6	0	7.6	0.770723104	10	100	7.71E-02	7.71E-03
Dibenzo(a,h)anthracene	1.7	0	1.7	0.172398589	10	100	1.72E-02	1.72E-03
Dibenzofuran	0.38	0	0.38	0.038536155	0	0	NA	NA
Fluoranthene	5.9	0	5.9	0.598324515	10	100	5.98E-02	5.98E-03
Fluorene	0.51	0	0.51	0.051719577	10	100	5.17E-03	5.17E-04
Indeno(1,2,3-cd)pyrene	4.3	0	4.3	0.436067019	10	100	4.36E-02	4.36E-03
Methylnaphthalene,2-	0.094	0	0.094	0.009532628	0.01	0.1	NA	NA
Naphthalene	0.39	0	0.39	0.039550265	0.01	0.1	NA	NA
Phenanthrene	4.4	0	4.4	0.446208113	10	100	4.46E-02	4.46E-03
Pyrene	9.5	0	9.5	0.96340388	10	100	9.63E-02	9.63E-03
Aluminum	5230	0	5230	530.3791887	109.7	1097	4.83E+00	4.83E-01
Beryllium	0.29	0	0.29	0.029409171	10	0	NA	NA
Chromium	9.4	0	9.4	0.953262787	0.1	1	9.53E+00	9.53E-01
Cyanide	0.19	0	0.19	0.019268078	4.5	45	4.28E-03	4.28E-04
Iron	7380	0	7380	748.4126984	100	1000	7.48E+00	7.48E-01
Lead	29	0	29	2.940917108	0.3	3	9.80E+00	9.80E-01
Mercury	0.13	0	0.13	0.013183422	0.01	0.1	1.32E+00	1.32E-01
Nickel	4.5	0	4.5	0.456349206	0	0	NA	NA
Vanadium	14.6	0	14.6	1.480599647	11.38	113.8	1.30E-01	1.30E-02
Zinc	124	0	124	12.57495591	13.9	139	9.05E-01	9.05E-02

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Red-Tailed Hawk
(Less Conservative Inputs)

Body Weight	1.1340000 kg
Food Ingestion Rate	0.1120000 kg/day
Water Ingestion Rate	0.0646400 L/day
Soil Ingestion Rate	0.0030000 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.2575	0	0.2575	0.026113316	10	100	2.61E-03	2.61E-04
Acenaphthylene	1.14875	0	1.14875	0.116495811	10	100	1.16E-02	1.16E-03
Anthracene	0.605	0	0.605	0.061353616	10	100	6.14E-03	6.14E-04
Benzo(a)anthracene	2.365	0	2.365	0.239836861	10	100	2.40E-02	2.40E-03
Benzo(a)pyrene	3.235	0	3.235	0.328064374	10	100	3.28E-02	3.28E-03
Benzo(b)fluoranthene	3.1975	0	3.1975	0.324261464	10	100	3.24E-02	3.24E-03
Benzo(g,h,i)perylene	1.71175	0	1.71175	0.173590168	10	100	1.74E-02	1.74E-03
Benzo(k)fluoranthene	1.0785	0	1.0785	0.109371693	10	100	1.09E-02	1.09E-03
Bis(2-ethylhexyl)phthalate	0.24375	0	0.24375	0.024718915	1.11	11.1	2.23E-02	2.23E-03
Carbazole	0.28	0	0.28	0.028395062	10	100	2.84E-03	2.84E-04
Chrysene	2.745	0	2.745	0.278373016	10	100	2.78E-02	2.78E-03
Dibenzo(a,h)anthracene	0.63	0	0.63	0.063888889	10	100	6.39E-03	6.39E-04
Dibenzofuran	0.3975	0	0.3975	0.040310847	0	0	NA	NA
Fluoranthene	2.8525	0	2.8525	0.289274691	10	100	2.89E-02	2.89E-03
Fluorene	0.3075	0	0.3075	0.031183862	10	100	3.12E-03	3.12E-04
Indeno(1,2,3-cd)pyrene	1.48675	0	1.48675	0.150772707	10	100	1.51E-02	1.51E-03
Methylnaphthalene,2-	0.2855	0	0.2855	0.028952822	0.01	0.1	NA	NA
Naphthalene	0.4	0	0.4	0.040564374	0.01	0.1	NA	NA
Phenanthrene	1.8825	0	1.8825	0.190906085	10	100	1.91E-02	1.91E-03
Pyrene	3.5925	0	3.5925	0.364318783	10	100	3.64E-02	3.64E-03
Aluminum	4675	0	4675	474.0961199	109.7	1097	4.32E+00	4.32E-01
Beryllium	0.17	0	0.17	0.017239859	10	0	NA	NA
Chromium	7.8	0	7.8	0.791005291	0.1	1	7.91E+00	7.91E-01
Cyanide	0.12	0	0.12	0.012169312	4.5	45	2.70E-03	2.70E-04
Iron	5647.5	0	5647.5	572.718254	100	1000	5.73E+00	5.73E-01
Lead	24.83	0	24.83	2.51803351	0.3	3	8.39E+00	8.39E-01
Mercury	0.08	0	0.08	0.008112875	0.01	0.1	8.11E-01	8.11E-02
Nickel	3.65	0	3.65	0.370149912	0	0	NA	NA
Vanadium	12.15	0	12.15	1.232142857	11.38	113.8	1.08E-01	1.08E-02
Zinc	51.38	0	51.38	5.210493827	13.9	139	3.75E-01	3.75E-02

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

American Robin
(Conservative Inputs)

Body Weight	0.0773000 kg
Food Ingestion Rate	0.1175000 kg/day
Water Ingestion Rate	0.0108000 L/day
Soil Ingestion Rate	0.0352500 kg/day

Maximum Concentrations Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.43	0	0.43	0.849708926	10	100	8.50E-02	8.50E-03
Acenaphthylene	2.8	0	2.8	5.532988357	10	100	5.53E-01	5.53E-02
Anthracene	1.1	0	1.1	2.173673997	10	100	2.17E-01	2.17E-02
Benzo(a)anthracene	6.5	0	6.5	12.84443726	10	100	1.28E+00	1.28E-01
Benzo(a)pyrene	9.5	0	9.5	18.77263907	10	100	1.88E+00	1.88E-01
Benzo(b)fluoranthene	8.5	0	8.5	16.7965718	10	100	1.68E+00	1.68E-01
Benzo(g,h,i)perylene	5	0	5	9.880336352	10	100	9.88E-01	9.88E-02
Benzo(k)fluoranthene	3	0	3	5.928201811	10	100	5.93E-01	5.93E-02
Bis(2-ethylhexyl)phthalate	0.17	0	0.17	0.335931436	1.11	11.1	3.03E-01	3.03E-02
Carbazole	0.54	0	0.54	1.067076326	10	100	1.07E-01	1.07E-02
Chrysene	7.6	0	7.6	15.01811125	10	100	1.50E+00	1.50E-01
Dibenzo(a,h)anthracene	1.7	0	1.7	3.35931436	10	100	3.36E-01	3.36E-02
Dibenzofuran	0.38	0	0.38	0.750905563	0	0	NA	NA
Fluoranthene	5.9	0	5.9	11.6587969	10	100	1.17E+00	1.17E-01
Fluorene	0.51	0	0.51	1.007794308	10	100	1.01E-01	1.01E-02
Indeno(1,2,3-cd)pyrene	4.3	0	4.3	8.497089263	10	100	8.50E-01	8.50E-02
Methylnaphthalene,2-	0.094	0	0.094	0.185750323	0.01	0.1	NA	NA
Naphthalene	0.39	0	0.39	0.770666235	0.01	0.1	NA	NA
Phenanthrene	4.4	0	4.4	8.69469599	10	100	8.69E-01	8.69E-02
Pyrene	9.5	0	9.5	18.77263907	10	100	1.88E+00	1.88E-01
Aluminum	5230	0	5230	10334.83182	109.7	1097	9.42E+01	9.42E+00
Beryllium	0.29	#REF!	0.29	#REF!	10	0	NA	NA
Chromium	9.4	0	9.4	18.57503234	0.1	1	1.86E+02	1.86E+01
Cyanide	0.19	0	0.19	0.375452781	4.5	45	8.34E-02	8.34E-03
Iron	7380	0	7380	14583.37646	100	1000	1.46E+02	1.46E+01
Lead	29	0	29	57.30595084	0.3	3	1.91E+02	1.91E+01
Mercury	0.13	0	0.13	0.256888745	0.01	0.1	2.57E+01	2.57E+00
Nickel	4.5	0	4.5	8.892302717	0	0	NA	NA
Vanadium	14.6	0	14.6	28.85058215	11.38	113.8	2.54E+00	2.54E-01
Zinc	124	0	124	245.0323415	13.9	139	1.76E+01	1.76E+00

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

American Robin
(Conservative Inputs)

Body Weight	0.0773000 kg
Food Ingestion Rate	0.1175000 kg/day
Water Ingestion Rate	0.0108000 L/day
Soil Ingestion Rate	0.0352500 kg/day

Mean Concentrations Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.2575	0	0.2575	0.508837322	10	100	5.09E-02	5.09E-03
Acenaphthylene	1.14875	0	1.14875	2.270007277	10	100	2.27E-01	2.27E-02
Anthracene	0.605	0	0.605	1.195520699	10	100	1.20E-01	1.20E-02
Benzo(a)anthracene	2.365	0	2.365	4.673399094	10	100	4.67E-01	4.67E-02
Benzo(a)pyrene	3.235	0	3.235	6.39257762	10	100	6.39E-01	6.39E-02
Benzo(b)fluoranthene	3.1975	0	3.1975	6.318475097	10	100	6.32E-01	6.32E-02
Benzo(g,h,i)perylene	1.71175	0	1.71175	3.38253315	10	100	3.38E-01	3.38E-02
Benzo(k)fluoranthene	1.0785	0	1.0785	2.131188551	10	100	2.13E-01	2.13E-02
Bis(2-ethylhexyl)phthalate	0.24375	0	0.24375	0.481666397	1.11	11.1	4.34E-01	4.34E-02
Carbazole	0.28	0	0.28	0.553298836	10	100	5.53E-02	5.53E-03
Chrysene	2.745	0	2.745	5.424304657	10	100	5.42E-01	5.42E-02
Dibenzo(a,h)anthracene	0.63	0	0.63	1.24492238	10	100	1.24E-01	1.24E-02
Dibenzofuran	0.3975	0	0.3975	0.78548674	0	0	NA	NA
Fluoranthene	2.8525	0	2.8525	5.636731889	10	100	5.64E-01	5.64E-02
Fluorene	0.3075	0	0.3075	0.607640686	10	100	6.08E-02	6.08E-03
Indeno(1,2,3-cd)pyrene	1.48675	0	1.48675	2.937918014	10	100	2.94E-01	2.94E-02
Methylnaphthalene,2-	0.2855	0	0.2855	0.564167206	0	0	NA	NA
Naphthalene	0.4	0	0.4	0.790426908	0	0	NA	NA
Phenanthrene	1.8825	0	1.8825	3.719946636	10	100	3.72E-01	3.72E-02
Pyrene	3.5925	0	3.5925	7.099021669	10	100	7.10E-01	7.10E-02
Aluminum	4675	0	4675	9238.114489	109.7	1097	8.42E+01	8.42E+00
Beryllium	0.17	0	0.17	0.335931436	10	0	NA	NA
Chromium	7.8	0	7.8	15.41332471	0.1	1	1.54E+02	1.54E+01
Cyanide	0.12	0	0.12	0.237128072	4.5	45	5.27E-02	5.27E-03
Iron	5647.5	0	5647.5	11159.83991	100	1000	1.12E+02	1.12E+01
Lead	24.83	0	24.83	49.06575032	0.3	3	1.64E+02	1.64E+01
Mercury	0.08	0	0.08	0.158085382	0.01	0.1	1.58E+01	1.58E+00
Nickel	3.65	0	3.65	7.212645537	0	0	NA	NA
Vanadium	12.15	0	12.15	24.00921734	11.38	113.8	2.11E+00	2.11E-01
Zinc	51.38	0	51.38	101.5303364	13.9	139	7.30E+00	7.30E-01

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

American Robin
(Less Conservative Inputs)

Body Weight	0.0810200 kg
Food Ingestion Rate	0.0976300 kg/day
Water Ingestion Rate	0.0113400 L/day
Soil Ingestion Rate	0.0292890 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.43	0	0.43	0.67360121	10	100	6.74E-02	6.74E-03
Acenaphthylene	2.8	0	2.8	4.386240434	10	100	4.39E-01	4.39E-02
Anthracene	1.1	0	1.1	1.723165885	10	100	1.72E-01	1.72E-02
Benzo(a)anthracene	6.5	0	6.5	10.18234387	10	100	1.02E+00	1.02E-01
Benzo(a)pyrene	9.5	0	9.5	14.88188719	10	100	1.49E+00	1.49E-01
Benzo(b)fluoranthene	8.5	0	8.5	13.31537275	10	100	1.33E+00	1.33E-01
Benzo(g,h,i)perylene	5	0	5	7.832572204	10	100	7.83E-01	7.83E-02
Benzo(k)fluoranthene	3	0	3	4.699543323	10	100	4.70E-01	4.70E-02
Bis(2-ethylhexyl)phthalate	0.17	0	0.17	0.266307455	1.11	11.1	2.40E-01	2.40E-02
Carbazole	0.54	0	0.54	0.845917798	10	100	8.46E-02	8.46E-03
Chrysene	7.6	0	7.6	11.90550975	10	100	1.19E+00	1.19E-01
Dibenzo(a,h)anthracene	1.7	0	1.7	2.663074549	10	100	2.66E-01	2.66E-02
Dibenzofuran	0.38	0	0.38	0.595275488	0	0	NA	NA
Fluoranthene	5.9	0	5.9	9.242435201	10	100	9.24E-01	9.24E-02
Fluorene	0.51	0	0.51	0.798922365	10	100	7.99E-02	7.99E-03
Indeno(1,2,3-cd)pyrene	4.3	0	4.3	6.736012096	10	100	6.74E-01	6.74E-02
Methylnaphthalene,2-	0.094	0	0.094	0.147252357	0.01	0.1	NA	NA
Naphthalene	0.39	0	0.39	0.610940632	0.01	0.1	NA	NA
Phenanthrene	4.4	0	4.4	6.89266354	10	100	6.89E-01	6.89E-02
Pyrene	9.5	0	9.5	14.88188719	10	100	1.49E+00	1.49E-01
Aluminum	5230	0	5230	8192.870526	109.7	1097	7.47E+01	7.47E+00
Beryllium	0.29	0	0.29	0.454289188	10	0	NA	NA
Chromium	9.4	0	9.4	14.72523574	0.1	1	1.47E+02	1.47E+01
Cyanide	0.19	0	0.19	0.297637744	4.5	45	6.61E-02	6.61E-03
Iron	7380	0	7380	11560.87657	100	1000	1.16E+02	1.16E+01
Lead	29	0	29	45.42891879	0.3	3	1.51E+02	1.51E+01
Mercury	0.13	0	0.13	0.203646877	0.01	0.1	2.04E+01	2.04E+00
Nickel	4.5	0	4.5	7.049314984	0	0	NA	NA
Vanadium	14.6	0	14.6	22.87111084	11.38	113.8	2.01E+00	2.01E-01
Zinc	124	0	124	194.2477907	13.9	139	1.40E+01	1.40E+00

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

American Robin
(Less Conservative Inputs)

Body Weight	0.0810200 kg
Food Ingestion Rate	0.0976300 kg/day
Water Ingestion Rate	0.0113400 L/day
Soil Ingestion Rate	0.0292890 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.2575	0	0.2575	0.403377469	10	100	4.03E-02	4.03E-03
Acenaphthylene	1.14875	0	1.14875	1.799533464	10	100	1.80E-01	1.80E-02
Anthracene	0.605	0	0.605	0.947741237	10	100	9.48E-02	9.48E-03
Benzo(a)anthracene	2.365	0	2.365	3.704806653	10	100	3.70E-01	3.70E-02
Benzo(a)pyrene	3.235	0	3.235	5.067674216	10	100	5.07E-01	5.07E-02
Benzo(b)fluoranthene	3.1975	0	3.1975	5.008929925	10	100	5.01E-01	5.01E-02
Benzo(g,h,i)perylene	1.71175	0	1.71175	2.681481094	10	100	2.68E-01	2.68E-02
Benzo(k)fluoranthene	1.0785	0	1.0785	1.689485824	10	100	1.69E-01	1.69E-02
Bis(2-ethylhexyl)phthalate	0.24375	0	0.24375	0.381837895	1.11	11.1	3.44E-01	3.44E-02
Carbazole	0.28	0	0.28	0.438624043	10	100	4.39E-02	4.39E-03
Chrysene	2.745	0	2.745	4.30008214	10	100	4.30E-01	4.30E-02
Dibenzo(a,h)anthracene	0.63	0	0.63	0.986904098	10	100	9.87E-02	9.87E-03
Dibenzofuran	0.3975	0	0.3975	0.62268949	0	0	NA	NA
Fluoranthene	2.8525	0	2.8525	4.468482443	10	100	4.47E-01	4.47E-02
Fluorene	0.3075	0	0.3075	0.481703191	10	100	4.82E-02	4.82E-03
Indeno(1,2,3-cd)pyrene	1.48675	0	1.48675	2.329015345	10	100	2.33E-01	2.33E-02
Methylnaphthalene,2-	0.2855	0	0.2855	0.447239873	0.01	0.1	NA	NA
Naphthalene	0.4	0	0.4	0.626605776	0.01	0.1	NA	NA
Phenanthrene	1.8825	0	1.8825	2.948963435	10	100	2.95E-01	2.95E-02
Pyrene	3.5925	0	3.5925	5.627703129	10	100	5.63E-01	5.63E-02
Aluminum	4675	0	4675	7323.455011	109.7	1097	6.68E+01	6.68E+00
Beryllium	0.17	0	0.17	0.266307455	10	0	NA	NA
Chromium	7.8	0	7.8	12.21881264	0.1	1	1.22E+02	1.22E+01
Cyanide	0.12	0	0.12	0.187981733	4.5	45	4.18E-02	4.18E-03
Iron	5647.5	0	5647.5	8846.890305	100	1000	8.85E+01	8.85E+00
Lead	24.83	0	24.83	38.89655357	0.3	3	1.30E+02	1.30E+01
Mercury	0.08	0	0.08	0.125321155	0.01	0.1	1.25E+01	1.25E+00
Nickel	3.65	0	3.65	5.717777709	0	0	NA	NA
Vanadium	12.15	0	12.15	19.03315046	11.38	113.8	1.67E+00	1.67E-01
Zinc	51.38	0	51.38	80.48751197	13.9	139	5.79E+00	5.79E-01

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Marsh Wren
(Conservative Inputs)

Body Weight	0.0103800 kg
Food Ingestion Rate	0.0090652 kg/day
Water Ingestion Rate	0.0028026 L/day
Soil Ingestion Rate	0.0009428 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.43	0	0.43	0.41458881	10	100	4.15E-02	4.15E-03
Acenaphthylene	2.8	0	2.8	2.69964805	10	100	2.70E-01	2.70E-02
Anthracene	1.1	0	1.1	1.06057602	10	100	1.06E-01	1.06E-02
Benzo(a)anthracene	6.5	0	6.5	6.26704013	10	100	6.27E-01	6.27E-02
Benzo(a)pyrene	9.5	0	9.5	9.15952018	10	100	9.16E-01	9.16E-02
Benzo(b)fluoranthene	8.5	0	8.5	8.19536016	10	100	8.20E-01	8.20E-02
Benzo(g,h,i)perylene	5	0	5	4.8208001	10	100	4.82E-01	4.82E-02
Benzo(k)fluoranthene	3	0	3	2.89248006	10	100	2.89E-01	2.89E-02
Bis(2-ethylhexyl)phthalate	0.17	0	0.17	0.1639072	1.11	11.1	1.48E-01	1.48E-02
Carbazole	0.54	0	0.54	0.52064641	10	100	5.21E-02	5.21E-03
Chrysene	7.6	0	7.6	7.32761615	10	100	7.33E-01	7.33E-02
Dibenzo(a,h)anthracene	1.7	0	1.7	1.63907203	10	100	1.64E-01	1.64E-02
Dibenzofuran	0.38	0	0.38	0.36638081	0	0	NA	NA
Fluoranthene	5.9	0	5.9	5.68854411	10	100	5.69E-01	5.69E-02
Fluorene	0.51	0	0.51	0.49172161	10	100	4.92E-02	4.92E-03
Indeno(1,2,3-cd)pyrene	4.3	0	4.3	4.14588808	10	100	4.15E-01	4.15E-02
Methylnaphthalene,2-	0.094	0	0.094	0.09063104	0	0	NA	NA
Naphthalene	0.39	0	0.39	0.37602241	0.01	0.1	NA	NA
Phenanthrene	4.4	0	4.4	4.24230408	10	100	4.24E-01	4.24E-02
Pyrene	9.5	0	9.5	9.15952018	10	100	9.16E-01	9.16E-02
Aluminum	5230	0	5230	5042.5569	109.7	1097	4.60E+01	4.60E+00
Beryllium	0.29	0	0.29	0.27960641	10	0	NA	NA
Chromium	9.4	0	9.4	9.06310418	0.1	1	9.06E+01	9.06E+00
Cyanide	0.19	0	0.19	0.1831904	4.5	45	4.07E-02	4.07E-03
Iron	7380	0	7380	7115.50094	100	1000	7.12E+01	7.12E+00
Lead	29	0	29	27.9606406	0.3	3	9.32E+01	9.32E+00
Mercury	0.13	0	0.13	0.1253408	0.01	0.1	1.25E+01	1.25E+00
Nickel	4.5	0	4.5	4.33872009	0	0	NA	NA
Vanadium	14.6	0	14.6	14.0767363	11.38	113.8	1.24E+00	1.24E-01
Zinc	124	0	124	119.555842	13.9	139	8.60E+00	8.60E-01

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Marsh Wren
(Conservative Inputs)

Body Weight	0.0103800 kg
Food Ingestion Rate	0.0090652 kg/day
Water Ingestion Rate	0.0028026 L/day
Soil Ingestion Rate	0.0009428 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.2575	0	0.2575	0.2482712	10	100	2.48E-02	2.48E-03
Acenaphthylene	1.14875	0	1.14875	1.10757882	10	100	1.11E-01	1.11E-02
Anthracene	0.605	0	0.605	0.58331681	10	100	5.83E-02	5.83E-03
Benzo(a)anthracene	2.365	0	2.365	2.28023845	10	100	2.28E-01	2.28E-02
Benzo(a)pyrene	3.235	0	3.235	3.11905766	10	100	3.12E-01	3.12E-02
Benzo(b)fluoranthene	3.1975	0	3.1975	3.08290166	10	100	3.08E-01	3.08E-02
Benzo(g,h,i)perylene	1.71175	0	1.71175	1.65040091	10	100	1.65E-01	1.65E-02
Benzo(k)fluoranthene	1.0785	0	1.0785	1.03984658	10	100	1.04E-01	1.04E-02
Bis(2-ethylhexyl)phthalate	0.24375	0	0.24375	0.235014	1.11	11.1	2.12E-01	2.12E-02
Carbazole	0.28	0	0.28	0.26996481	10	100	2.70E-02	2.70E-03
Chrysene	2.745	0	2.745	2.64661925	10	100	2.65E-01	2.65E-02
Dibenzo(a,h)anthracene	0.63	0	0.63	0.60742081	10	100	6.07E-02	6.07E-03
Dibenzofuran	0.3975	0	0.3975	0.38325361	0	0	NA	NA
Fluoranthene	2.8525	0	2.8525	2.75026645	10	100	2.75E-01	2.75E-02
Fluorene	0.3075	0	0.3075	0.29647921	10	100	2.96E-02	2.96E-03
Indeno(1,2,3-cd)pyrene	1.48675	0	1.48675	1.43346491	10	100	1.43E-01	1.43E-02
Methylnaphthalene,2-	0.2855	0	0.2855	0.27526769	0	0	NA	NA
Naphthalene	0.4	0	0.4	0.38566401	0.01	0.1	NA	NA
Phenanthrene	1.8825	0	1.8825	1.81503124	10	100	1.82E-01	1.82E-02
Pyrene	3.5925	0	3.5925	3.46374487	10	100	3.46E-01	3.46E-02
Aluminum	4675	0	4675	4507.44809	109.7	1097	4.11E+01	4.11E+00
Beryllium	0.17	0	0.17	0.1639072	10	0	NA	NA
Chromium	7.8	0	7.8	7.52044815	0.1	1	7.52E+01	7.52E+00
Cyanide	0.12	0	0.12	0.1156992	4.5	45	2.57E-02	2.57E-03
Iron	5647.5	0	5647.5	5445.09371	100	1000	5.45E+01	5.45E+00
Lead	24.83	0	24.83	23.9400933	0.3	3	7.98E+01	7.98E+00
Mercury	0.08	0	0.08	0.0771328	0.01	0.1	7.71E+00	7.71E-01
Nickel	3.65	0	3.65	3.51918407	0	0	NA	NA
Vanadium	12.15	0	12.15	11.7145442	11.38	113.8	1.03E+00	1.03E-01
Zinc	51.38	0	51.38	49.5385418	13.9	139	3.56E+00	3.56E-01

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Marsh Wren
(Less Conservative Inputs)

Body Weight	0.0161000 kg
Food Ingestion Rate	0.0036000 kg/day
Water Ingestion Rate	0.0040000 L/day
Soil Ingestion Rate	0.0009428 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.43	0	0.43	0.12132893	10	100	1.21E-02	1.21E-03
Acenaphthylene	2.8	0	2.8	0.79004887	10	100	7.90E-02	7.90E-03
Anthracene	1.1	0	1.1	0.31037634	10	100	3.10E-02	3.10E-03
Benzo(a)anthracene	6.5	0	6.5	1.83404202	10	100	1.83E-01	1.83E-02
Benzo(a)pyrene	9.5	0	9.5	2.68052295	10	100	2.68E-01	2.68E-02
Benzo(b)fluoranthene	8.5	0	8.5	2.39836264	10	100	2.40E-01	2.40E-02
Benzo(g,h,i)perylene	5	0	5	1.41080155	10	100	1.41E-01	1.41E-02
Benzo(k)fluoranthene	3	0	3	0.84648093	10	100	8.46E-02	8.46E-03
Bis(2-ethylhexyl)phthalate	0.17	0	0.17	0.04796725	1.11	11.1	4.32E-02	4.32E-03
Carbazole	0.54	0	0.54	0.15236657	10	100	1.52E-02	1.52E-03
Chrysene	7.6	0	7.6	2.14441836	10	100	2.14E-01	2.14E-02
Dibenzo(a,h)anthracene	1.7	0	1.7	0.47967253	10	100	4.80E-02	4.80E-03
Dibenzofuran	0.38	0	0.38	0.10722092	0	0	NA	NA
Fluoranthene	5.9	0	5.9	1.66474583	10	100	1.66E-01	1.66E-02
Fluorene	0.51	0	0.51	0.14390176	10	100	1.44E-02	1.44E-03
Indeno(1,2,3-cd)pyrene	4.3	0	4.3	1.21328934	10	100	1.21E-01	1.21E-02
Methylnaphthalene,2-	0.094	0	0.094	0.02652307	0.01	0.1	NA	NA
Naphthalene	0.39	0	0.39	0.11004252	0.01	0.1	NA	NA
Phenanthrene	4.4	0	4.4	1.24150537	10	100	1.24E-01	1.24E-02
Pyrene	9.5	0	9.5	2.68052295	10	100	2.68E-01	2.68E-02
Aluminum	5230	0	5230	1475.69842	109.7	1097	1.35E+01	1.35E+00
Beryllium	0.29	0	0.29	0.08182649	10	0	NA	NA
Chromium	9.4	0	9.4	2.65230692	0.1	1	2.65E+01	2.65E+00
Cyanide	0.19	0	0.19	0.05361046	4.5	45	1.19E-02	1.19E-03
Iron	7380	0	7380	2082.34309	100	1000	2.08E+01	2.08E+00
Lead	29	0	29	8.18264901	0.3	3	2.73E+01	2.73E+00
Mercury	0.13	0	0.13	0.03668084	0.01	0.1	3.67E+00	3.67E-01
Nickel	4.5	0	4.5	1.2697214	0	0	NA	NA
Vanadium	14.6	0	14.6	4.11954053	11.38	113.8	3.62E-01	3.62E-02
Zinc	124	0	124	34.9878785	13.9	139	2.52E+00	2.52E-01

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Marsh Wren
(Less Conservative Inputs)

Body Weight	0.0161000 kg
Food Ingestion Rate	0.0036000 kg/day
Water Ingestion Rate	0.0040000 L/day
Soil Ingestion Rate	0.0009428 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.2575	0	0.2575	0.07265628	10	100	7.27E-03	7.27E-04
Acenaphthylene	1.14875	0	1.14875	0.32413166	10	100	3.24E-02	3.24E-03
Anthracene	0.605	0	0.605	0.17070699	10	100	1.71E-02	1.71E-03
Benzo(a)anthracene	2.365	0	2.365	0.66730913	10	100	6.67E-02	6.67E-03
Benzo(a)pyrene	3.235	0	3.235	0.9127886	10	100	9.13E-02	9.13E-03
Benzo(b)fluoranthene	3.1975	0	3.1975	0.90220759	10	100	9.02E-02	9.02E-03
Benzo(g,h,i)perylene	1.71175	0	1.71175	0.48298791	10	100	4.83E-02	4.83E-03
Benzo(k)fluoranthene	1.0785	0	1.0785	0.30430989	10	100	3.04E-02	3.04E-03
Bis(2-ethylhexyl)phthalate	0.24375	0	0.24375	0.06877658	1.11	11.1	6.20E-02	6.20E-03
Carbazole	0.28	0	0.28	0.07900489	10	100	7.90E-03	7.90E-04
Chrysene	2.745	0	2.745	0.77453005	10	100	7.75E-02	7.75E-03
Dibenzo(a,h)anthracene	0.63	0	0.63	0.177761	10	100	1.78E-02	1.78E-03
Dibenzofuran	0.3975	0	0.3975	0.11215872	0	0	NA	NA
Fluoranthene	2.8525	0	2.8525	0.80486229	10	100	8.05E-02	8.05E-03
Fluorene	0.3075	0	0.3075	0.0867643	10	100	8.68E-03	8.68E-04
Indeno(1,2,3-cd)pyrene	1.48675	0	1.48675	0.41950184	10	100	4.20E-02	4.20E-03
Methylnaphthalene,2-	0.2855	0	0.2855	0.08055677	0.01	0.1	NA	NA
Naphthalene	0.4	0	0.4	0.11286412	0.01	0.1	NA	NA
Phenanthrene	1.8825	0	1.8825	0.53116678	10	100	5.31E-02	5.31E-03
Pyrene	3.5925	0	3.5925	1.01366092	10	100	1.01E-01	1.01E-02
Aluminum	4675	0	4675	1319.09945	109.7	1097	1.20E+01	1.20E+00
Beryllium	0.17	0	0.17	0.04796725	10	0	NA	NA
Chromium	7.8	0	7.8	2.20085042	0.1	1	2.20E+01	2.20E+00
Cyanide	0.12	0	0.12	0.03385924	4.5	45	7.52E-03	7.52E-04
Iron	5647.5	0	5647.5	1593.50035	100	1000	1.59E+01	1.59E+00
Lead	24.83	0	24.83	7.00604051	0.3	3	2.34E+01	2.34E+00
Mercury	0.08	0	0.08	0.02257282	0.01	0.1	2.26E+00	2.26E-01
Nickel	3.65	0	3.65	1.02988513	0	0	NA	NA
Vanadium	12.15	0	12.15	3.42824777	11.38	113.8	3.01E-01	3.01E-02
Zinc	51.38	0	51.38	14.4973968	13.9	139	1.04E+00	1.04E-01

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Red Fox
(Conservative Inputs)

Body Weight	4.5300000 kg
Food Ingestion Rate	0.5895500 kg/day
Water Ingestion Rate	0.3854750 L/day
Soil Ingestion Rate	0.0165074 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.43	0	0.43	0.05752863	1.3	2.6	4.43E-02	2.21E-02
Acenaphthylene	2.8	0	2.8	0.37460502	1.3	2.6	2.88E-01	1.44E-01
Anthracene	1.1	0	1.1	0.14716626	1.3	2.6	1.13E-01	5.66E-02
Benzo(a)anthracene	6.5	0	6.5	0.86961879	1.3	2.6	6.69E-01	3.34E-01
Benzo(a)pyrene	9.5	0	9.5	1.2709813	1.3	2.6	9.78E-01	4.89E-01
Benzo(b)fluoranthene	8.5	0	8.5	1.1371938	1.3	2.6	8.75E-01	4.37E-01
Benzo(g,h,i)perylene	5	0	5	0.66893753	1.3	2.6	5.15E-01	2.57E-01
Benzo(k)fluoranthene	3	0	3	0.40136252	1.3	2.6	3.09E-01	1.54E-01
Bis(2-ethylhexyl)phthalate	0.17	0	0.17	0.02274388	0.1833	1.833	1.24E-01	1.24E-02
Carbazole	0.54	0	0.54	0.07224525	1.3	2.6	5.56E-02	2.78E-02
Chrysene	7.6	0	7.6	1.01678504	1.3	2.6	7.82E-01	3.91E-01
Dibenzo(a,h)anthracene	1.7	0	1.7	0.22743876	1.3	2.6	1.75E-01	8.75E-02
Dibenzofuran	0.38	0	0.38	0.05083925	0	0	NA	NA
Fluoranthene	5.9	0	5.9	0.78934628	1.3	2.6	6.07E-01	3.04E-01
Fluorene	0.51	0	0.51	0.06823163	1.3	2.6	5.25E-02	2.62E-02
Indeno(1,2,3-cd)pyrene	4.3	0	4.3	0.57528627	1.3	2.6	4.43E-01	2.21E-01
Methylnaphthalene,2-	0.094	0	0.094	0.01257603	0.01	0.5	NA	NA
Naphthalene	0.39	0	0.39	0.05217713	0.01	0.5	NA	NA
Phenanthrene	4.4	0	4.4	0.58866502	1.3	2.6	4.53E-01	2.26E-01
Pyrene	9.5	0	9.5	1.2709813	1.3	2.6	9.78E-01	4.89E-01
Aluminum	5230	0	5230	699.708654	1.93	19.3	3.63E+02	3.63E+01
Beryllium	0.29	0	0.29	0.03879838	1.3	5.4	2.98E-02	7.18E-03
Chromium	9.4	0	9.4	1.25760255	0.025	0.25	5.03E+01	5.03E+00
Cyanide	0.19	0	0.19	0.02541963	0.8	8	3.18E-02	3.18E-03
Iron	7380	0	7380	987.351791	50	500	1.97E+01	1.97E+00
Lead	29	0	29	3.87983766	0.15	1.5	2.59E+01	2.59E+00
Mercury	0.13	0	0.13	0.01739238	0.01	0.5	1.74E+00	3.48E-02
Nickel	4.5	0	4.5	0.60204377	62.5	625	9.63E-03	9.63E-04
Vanadium	14.6	0	14.6	1.95329758	0.2	2	9.77E+00	9.77E-01
Zinc	124	0	124	16.5896507	25	250	6.64E-01	6.64E-02

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Red Fox
(Conservative Inputs)

Body Weight	4.5300000 kg
Food Ingestion Rate	0.5895500 kg/day
Water Ingestion Rate	0.3854750 L/day
Soil Ingestion Rate	0.0165074 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.2575	0	0.2575	0.034450283	1.3	2.6	2.65E-02	1.33E-02
Acenaphthylene	1.14875	0	1.14875	0.153688397	1.3	2.6	1.18E-01	5.91E-02
Anthracene	0.605	0	0.605	0.080941441	1.3	2.6	6.23E-02	3.11E-02
Benzo(a)anthracene	2.365	0	2.365	0.316407451	1.3	2.6	2.43E-01	1.22E-01
Benzo(a)pyrene	3.235	0	3.235	0.43280258	1.3	2.6	3.33E-01	1.66E-01
Benzo(b)fluoranthene	3.1975	0	3.1975	0.427785549	1.3	2.6	3.29E-01	1.65E-01
Benzo(g,h,i)perylene	1.71175	0	1.71175	0.229010763	1.3	2.6	1.76E-01	8.81E-02
Benzo(k)fluoranthene	1.0785	0	1.0785	0.144289825	1.3	2.6	1.11E-01	5.55E-02
Bis(2-ethylhexyl)phthalate	0.24375	0	0.24375	0.032610704	0.1833	1.833	1.78E-01	1.78E-02
Carbazole	0.28	0	0.28	0.037460502	1.3	2.6	2.88E-02	1.44E-02
Chrysene	2.745	0	2.745	0.367246703	1.3	2.6	2.82E-01	1.41E-01
Dibenzo(a,h)anthracene	0.63	0	0.63	0.084286128	1.3	2.6	6.48E-02	3.24E-02
Dibenzofuran	0.3975	0	0.3975	0.053180533	0	0	NA	NA
Fluoranthene	2.8525	0	2.8525	0.381628859	1.3	2.6	2.94E-01	1.47E-01
Fluorene	0.3075	0	0.3075	0.041139658	1.3	2.6	3.16E-02	1.58E-02
Indeno(1,2,3-cd)pyrene	1.48675	0	1.48675	0.198908574	1.3	2.6	1.53E-01	7.65E-02
Methylnaphthalene,2-	0.2855	0	0.2855	0.038196333	0	0	NA	NA
Naphthalene	0.4	0	0.4	0.053515002	0.01	0.5	NA	NA
Phenanthrene	1.8825	0	1.8825	0.251854979	1.3	2.6	1.94E-01	9.69E-02
Pyrene	3.5925	0	3.5925	0.480631614	1.3	2.6	3.70E-01	1.85E-01
Aluminum	4675	0	4675	625.4565883	1.93	19.3	3.24E+02	3.24E+01
Beryllium	0.17	0	0.17	0.022743876	1.3	5.4	1.75E-02	4.21E-03
Chromium	7.8	0	7.8	1.043542543	0.025	0.25	4.17E+01	4.17E+00
Cyanide	0.12	0	0.12	0.016054501	0.8	8	2.01E-02	2.01E-03
Iron	5647.5	0	5647.5	755.5649374	50	500	1.51E+01	1.51E+00
Lead	24.83	0	24.83	3.321943762	0.15	1.5	2.21E+01	2.21E+00
Mercury	0.08	0	0.08	0.010703	0.01	0.5	1.07E+00	2.14E-02
Nickel	3.65	0	3.65	0.488324395	62.5	625	7.81E-03	7.81E-04
Vanadium	12.15	0	12.15	1.625518192	0.2	2	8.13E+00	8.13E-01
Zinc	51.38	0	51.38	6.874002034	25	250	2.75E-01	2.75E-02

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Red Fox
(Less Conservative Inputs)

Body Weight	5.0000000 kg
Food Ingestion Rate	0.3200000 kg/day
Water Ingestion Rate	0.2752000 L/day
Soil Ingestion Rate	0.0090000 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.43	0	0.43	0.028294	1.3	2.6	2.18E-02	1.09E-02
Acenaphthylene	2.8	0	2.8	0.18424	1.3	2.6	1.42E-01	7.09E-02
Anthracene	1.1	0	1.1	0.07238	1.3	2.6	5.57E-02	2.78E-02
Benzo(a)anthracene	6.5	0	6.5	0.4277	1.3	2.6	3.29E-01	1.65E-01
Benzo(a)pyrene	9.5	0	9.5	0.6251	1.3	2.6	4.81E-01	2.40E-01
Benzo(b)fluoranthene	8.5	0	8.5	0.5593	1.3	2.6	4.30E-01	2.15E-01
Benzo(g,h,i)perylene	5	0	5	0.329	1.3	2.6	2.53E-01	1.27E-01
Benzo(k)fluoranthene	3	0	3	0.1974	1.3	2.6	1.52E-01	7.59E-02
Bis(2-ethylhexyl)phthalate	0.17	0	0.17	0.011186	0.1833	1.833	6.10E-02	6.10E-03
Carbazole	0.54	0	0.54	0.035532	1.3	2.6	2.73E-02	1.37E-02
Chrysene	7.6	0	7.6	0.50008	1.3	2.6	3.85E-01	1.92E-01
Dibenzo(a,h)anthracene	1.7	0	1.7	0.11186	1.3	2.6	8.60E-02	4.30E-02
Dibenzofuran	0.38	0	0.38	0.025004	0	0	NA	NA
Fluoranthene	5.9	0	5.9	0.38822	1.3	2.6	2.99E-01	1.49E-01
Fluorene	0.51	0	0.51	0.033558	1.3	2.6	2.58E-02	1.29E-02
Indeno(1,2,3-cd)pyrene	4.3	0	4.3	0.28294	1.3	2.6	2.18E-01	1.09E-01
Methylnaphthalene,2-	0.094	0	0.094	0.0061852	0.01	0.5	NA	NA
Naphthalene	0.39	0	0.39	0.025662	0.01	0.5	NA	NA
Phenanthrene	4.4	0	4.4	0.28952	1.3	2.6	2.23E-01	1.11E-01
Pyrene	9.5	0	9.5	0.6251	1.3	2.6	4.81E-01	2.40E-01
Aluminum	5230	0	5230	344.134	1.93	19.3	1.78E+02	1.78E+01
Beryllium	0.29	0	0.29	0.019082	0.54	5.4	3.53E-02	3.53E-03
Chromium	9.4	0	9.4	0.61852	0.025	0.25	2.47E+01	2.47E+00
Cyanide	0.19	0	0.19	0.012502	0.8	8	1.56E-02	1.56E-03
Iron	7380	0	7380	485.604	50	500	9.71E+00	9.71E-01
Lead	29	0	29	1.9082	0.15	1.5	1.27E+01	1.27E+00
Mercury	0.13	0	0.13	0.008554	0.01	0.5	8.55E-01	1.71E-02
Nickel	4.5	0	4.5	0.2961	62.5	625	4.74E-03	4.74E-04
Vanadium	14.6	0	14.6	0.96068	0.2	2	4.80E+00	4.80E-01
Zinc	124	0	124	8.1592	25	250	3.26E-01	3.26E-02

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Red Fox
(Less Conservative Inputs)

Body Weight	5.0000000 kg
Food Ingestion Rate	0.3200000 kg/day
Water Ingestion Rate	0.2752000 L/day
Soil Ingestion Rate	0.0090000 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.2575	0	0.2575	0.0169435	1.3	2.6	1.30E-02	6.52E-03
Acenaphthylene	1.14875	0	1.14875	0.07558775	1.3	2.6	5.81E-02	2.91E-02
Anthracene	0.605	0	0.605	0.039809	1.3	2.6	3.06E-02	1.53E-02
Benzo(a)anthracene	2.365	0	2.365	0.155617	1.3	2.6	1.20E-01	5.99E-02
Benzo(a)pyrene	3.235	0	3.235	0.212863	1.3	2.6	1.64E-01	8.19E-02
Benzo(b)fluoranthene	3.1975	0	3.1975	0.2103955	1.3	2.6	1.62E-01	8.09E-02
Benzo(g,h,i)perylene	1.71175	0	1.71175	0.11263315	1.3	2.6	8.66E-02	4.33E-02
Benzo(k)fluoranthene	1.0785	0	1.0785	0.0709653	1.3	2.6	5.46E-02	2.73E-02
Bis(2-ethylhexyl)phthalate	0.24375	0	0.24375	0.01603875	0.1833	1.833	8.75E-02	8.75E-03
Carbazole	0.28	0	0.28	0.018424	1.3	2.6	1.42E-02	7.09E-03
Chrysene	2.745	0	2.745	0.180621	1.3	2.6	1.39E-01	6.95E-02
Dibenzo(a,h)anthracene	0.63	0	0.63	0.041454	1.3	2.6	3.19E-02	1.59E-02
Dibenzofuran	0.3975	0	0.3975	0.0261555	0	0	NA	NA
Fluoranthene	2.8525	0	2.8525	0.1876945	1.3	2.6	1.44E-01	7.22E-02
Fluorene	0.3075	0	0.3075	0.0202335	1.3	2.6	1.56E-02	7.78E-03
Indeno(1,2,3-cd)pyrene	1.48675	0	1.48675	0.09782815	1.3	2.6	7.53E-02	3.76E-02
Methylnaphthalene,2-	0.2855	0	0.2855	0.0187859	0.01	0.5	NA	NA
Naphthalene	0.4	0	0.4	0.02632	0.01	0.5	NA	NA
Phenanthrene	1.8825	0	1.8825	0.1238685	1.3	2.6	9.53E-02	4.76E-02
Pyrene	3.5925	0	3.5925	0.2363865	1.3	2.6	1.82E-01	9.09E-02
Aluminum	4675	0	4675	307.615	1.93	19.3	1.59E+02	1.59E+01
Beryllium	0.17	0	0.17	0.011186	0.54	5.4	2.07E-02	2.07E-03
Chromium	7.8	0	7.8	0.51324	0.025	0.25	2.05E+01	2.05E+00
Cyanide	0.12	0	0.12	0.007896	0.8	8	9.87E-03	9.87E-04
Iron	5647.5	0	5647.5	371.6055	50	500	7.43E+00	7.43E-01
Lead	24.83	0	24.83	1.633814	0.15	1.5	1.09E+01	1.09E+00
Mercury	0.08	0	0.08	0.005264	0.01	0.5	5.26E-01	1.05E-02
Nickel	3.65	0	3.65	0.24017	62.5	625	3.84E-03	3.84E-04
Vanadium	12.15	0	12.15	0.79947	0.2	2	4.00E+00	4.00E-01
Zinc	51.38	0	51.38	3.380804	25	250	1.35E-01	1.35E-02

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Short-Tailed Shrew
(Conservative Inputs)

Body Weight	0.0150000 kg
Food Ingestion Rate	0.0093000 kg/day
Water Ingestion Rate	0.0033450 L/day
Soil Ingestion Rate	0.0009672 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.43	0	0.43	0.2943264	1.3	2.6	2.26E-01	1.13E-01
Acenaphthylene	2.8	0	2.8	1.916544	1.3	2.6	1.47E+00	7.37E-01
Anthracene	1.1	0	1.1	0.752928	1.3	2.6	5.79E-01	2.90E-01
Benzo(a)anthracene	6.5	0	6.5	4.44912	1.3	2.6	3.42E+00	1.71E+00
Benzo(a)pyrene	9.5	0	9.5	6.50256	1.3	2.6	5.00E+00	2.50E+00
Benzo(b)fluoranthene	8.5	0	8.5	5.81808	1.3	2.6	4.48E+00	2.24E+00
Benzo(g,h,i)perylene	5	0	5	3.4224	1.3	2.6	2.63E+00	1.32E+00
Benzo(k)fluoranthene	3	0	3	2.05344	1.3	2.6	1.58E+00	7.90E-01
Bis(2-ethylhexyl)phthalate	0.17	0	0.17	0.1163616	0.1833	1.833	6.35E-01	6.35E-02
Carbazole	0.54	0	0.54	0.3696192	1.3	2.6	2.84E-01	1.42E-01
Chrysene	7.6	0	7.6	5.202048	1.3	2.6	4.00E+00	2.00E+00
Dibenzo(a,h)anthracene	1.7	0	1.7	1.163616	1.3	2.6	8.95E-01	4.48E-01
Dibenzofuran	0.38	0	0.38	0.2601024	0	0	NA	NA
Fluoranthene	5.9	0	5.9	4.038432	1.3	2.6	3.11E+00	1.55E+00
Fluorene	0.51	0	0.51	0.3490848	1.3	2.6	2.69E-01	1.34E-01
Indeno(1,2,3-cd)pyrene	4.3	0	4.3	2.943264	1.3	2.6	2.26E+00	1.13E+00
Methylnaphthalene,2-	0.094	0	0.094	0.06434112	0.05	0.5	NA	NA
Naphthalene	0.39	0	0.39	0.2669472	0.05	0.5	NA	NA
Phenanthrene	4.4	0	4.4	3.011712	1.3	2.6	2.32E+00	1.16E+00
Pyrene	9.5	0	9.5	6.50256	1.3	2.6	5.00E+00	2.50E+00
Aluminum	5230	0	5230	3579.8304	1.93	19.3	1.85E+03	1.85E+02
Beryllium	0.29	0	0.29	0.1984992	1.3	5.4	1.53E-01	3.68E-02
Chromium	9.4	0	9.4	6.434112	0.025	0.25	2.57E+02	2.57E+01
Cyanide	0.19	0	0.19	0.1300512	0.8	8	1.63E-01	1.63E-02
Iron	7380	0	7380	5051.4624	50	500	1.01E+02	1.01E+01
Lead	29	0	29	19.84992	0.15	1.5	1.32E+02	1.32E+01
Mercury	0.13	0	0.13	0.0889824	0.05	0.5	1.78E+00	1.78E-01
Nickel	4.5	0	4.5	3.08016	62.5	625	4.93E-02	4.93E-03
Vanadium	14.6	0	14.6	9.993408	0.2	2	5.00E+01	5.00E+00
Zinc	124	0	124	84.87552	25	250	3.40E+00	3.40E-01

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Short-Tailed Shrew
(Conservative Inputs)

Body Weight	0.0150000 kg
Food Ingestion Rate	0.0093000 kg/day
Water Ingestion Rate	0.0033450 L/day
Soil Ingestion Rate	0.0009672 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.2575	0	0.2575	0.1762536	1.3	2.6	1.36E-01	6.78E-02
Acenaphthylene	1.14875	0	1.14875	0.7862964	1.3	2.6	6.05E-01	3.02E-01
Anthracene	0.605	0	0.605	0.4141104	1.3	2.6	3.19E-01	1.59E-01
Benzo(a)anthracene	2.365	0	2.365	1.6187952	1.3	2.6	1.25E+00	6.23E-01
Benzo(a)pyrene	3.235	0	3.235	2.2142928	1.3	2.6	1.70E+00	8.52E-01
Benzo(b)fluoranthene	3.1975	0	3.1975	2.1886248	1.3	2.6	1.68E+00	8.42E-01
Benzo(g,h,i)perylene	1.71175	0	1.71175	1.17165864	1.3	2.6	9.01E-01	4.51E-01
Benzo(k)fluoranthene	1.0785	0	1.0785	0.73821168	1.3	2.6	5.68E-01	2.84E-01
Bis(2-ethylhexyl)phthalate	0.24375	0	0.24375	0.166842	0.1833	1.833	9.10E-01	9.10E-02
Carbazole	0.28	0	0.28	0.1916544	1.3	2.6	1.47E-01	7.37E-02
Chrysene	2.745	0	2.745	1.8788976	1.3	2.6	1.45E+00	7.23E-01
Dibenzo(a,h)anthracene	0.63	0	0.63	0.4312224	1.3	2.6	3.32E-01	1.66E-01
Dibenzofuran	0.3975	0	0.3975	0.2720808	0	0	NA	NA
Fluoranthene	2.8525	0	2.8525	1.9524792	1.3	2.6	1.50E+00	7.51E-01
Fluorene	0.3075	0	0.3075	0.2104776	1.3	2.6	1.62E-01	8.10E-02
Indeno(1,2,3-cd)pyrene	1.48675	0	1.48675	1.01765064	1.3	2.6	7.83E-01	3.91E-01
Methylnaphthalene,2-	0.2855	0	0.2855	0.19541904	0	0	NA	NA
Naphthalene	0.4	0	0.4	0.273792	0.05	0	NA	NA
Phenanthrene	1.8825	0	1.8825	1.2885336	1.3	2.6	9.91E-01	4.96E-01
Pyrene	3.5925	0	3.5925	2.4589944	1.3	2.6	1.89E+00	9.46E-01
Aluminum	4675	0	4675	3199.944	1.93	19.3	1.66E+03	1.66E+02
Beryllium	0.17	0	0.17	0.1163616	1.3	5.4	8.95E-02	2.15E-02
Chromium	7.8	0	7.8	5.338944	0.025	0.25	2.14E+02	2.14E+01
Cyanide	0.12	0	0.12	0.0821376	0.8	8	1.03E-01	1.03E-02
Iron	5647.5	0	5647.5	3865.6008	50	500	7.73E+01	7.73E+00
Lead	24.83	0	24.83	16.9956384	0.15	1.5	1.13E+02	1.13E+01
Mercury	0.08	0	0.08	0.0547584	0.05	0.5	1.10E+00	1.10E-01
Nickel	3.65	0	3.65	2.498352	62.5	625	4.00E-02	4.00E-03
Vanadium	12.15	0	12.15	8.316432	0.2	2	4.16E+01	4.16E+00
Zinc	51.38	0	51.38	35.1685824	25	250	1.41E+00	1.41E-01

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Short-Tailed Shrew
(Less Conservative Inputs)

Body Weight	0.0167980 kg
Food Ingestion Rate	0.0093229 kg/day
Water Ingestion Rate	0.0037459 L/day
Soil Ingestion Rate	0.0009672 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.43	0	0.43	0.263408662	1.3	2.6	2.03E-01	1.01E-01
Acenaphthylene	2.8	0	2.8	1.715219193	1.3	2.6	1.32E+00	6.60E-01
Anthracene	1.1	0	1.1	0.673836111	1.3	2.6	5.18E-01	2.59E-01
Benzo(a)anthracene	6.5	0	6.5	3.98175884	1.3	2.6	3.06E+00	1.53E+00
Benzo(a)pyrene	9.5	0	9.5	5.81949369	1.3	2.6	4.48E+00	2.24E+00
Benzo(b)fluoranthene	8.5	0	8.5	5.206915407	1.3	2.6	4.01E+00	2.00E+00
Benzo(g,h,i)perylene	5	0	5	3.062891416	1.3	2.6	2.36E+00	1.18E+00
Benzo(k)fluoranthene	3	0	3	1.837734849	1.3	2.6	1.41E+00	7.07E-01
Bis(2-ethylhexyl)phthalate	0.17	0	0.17	0.104138308	0.1833	1.833	5.68E-01	5.68E-02
Carbazole	0.54	0	0.54	0.330792273	1.3	2.6	2.54E-01	1.27E-01
Chrysene	7.6	0	7.6	4.655594952	1.3	2.6	3.58E+00	1.79E+00
Dibenzo(a,h)anthracene	1.7	0	1.7	1.041383081	1.3	2.6	8.01E-01	4.01E-01
Dibenzofuran	0.38	0	0.38	0.232779748	0	0	NA	NA
Fluoranthene	5.9	0	5.9	3.61421187	1.3	2.6	2.78E+00	1.39E+00
Fluorene	0.51	0	0.51	0.312414924	1.3	2.6	2.40E-01	1.20E-01
Indeno(1,2,3-cd)pyrene	4.3	0	4.3	2.634086617	1.3	2.6	2.03E+00	1.01E+00
Methylnaphthalene,2-	0.094	0	0.094	0.057582359	0.05	0.5	NA	NA
Naphthalene	0.39	0	0.39	0.23890553	0.05	0.5	NA	NA
Phenanthrene	4.4	0	4.4	2.695344446	1.3	2.6	2.07E+00	1.04E+00
Pyrene	9.5	0	9.5	5.81949369	1.3	2.6	4.48E+00	2.24E+00
Aluminum	5230	0	5230	3203.784421	1.93	19.3	1.66E+03	1.66E+02
Beryllium	0.29	0	0.29	0.177647702	0.54	5.4	3.29E-01	3.29E-02
Chromium	9.4	0	9.4	5.758235861	0.025	0.25	2.30E+02	2.30E+01
Cyanide	0.19	0	0.19	0.116389874	0.8	8	1.45E-01	1.45E-02
Iron	7380	0	7380	4520.827729	50	500	9.04E+01	9.04E+00
Lead	29	0	29	17.76477021	0.15	1.5	1.18E+02	1.18E+01
Mercury	0.13	0	0.13	0.079635177	0.05	0.5	1.59E+00	1.59E-01
Nickel	4.5	0	4.5	2.756602274	62.5	625	4.41E-02	4.41E-03
Vanadium	14.6	0	14.6	8.943642934	0.2	2	4.47E+01	4.47E+00
Zinc	124	0	124	75.95970711	25	250	3.04E+00	3.04E-01

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown

Short-Tailed Shrew
(Less Conservative Inputs)

Body Weight	0.0167980 kg
Food Ingestion Rate	0.0093229 kg/day
Water Ingestion Rate	0.0037459 L/day
Soil Ingestion Rate	0.0009672 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.2575	0	0.2575	0.157738908	1.3	2.6	1.21E-01	6.07E-02
Acenaphthylene	1.14875	0	1.14875	0.703699303	1.3	2.6	5.41E-01	2.71E-01
Anthracene	0.605	0	0.605	0.370609861	1.3	2.6	2.85E-01	1.43E-01
Benzo(a)anthracene	2.365	0	2.365	1.44874764	1.3	2.6	1.11E+00	5.57E-01
Benzo(a)pyrene	3.235	0	3.235	1.981690746	1.3	2.6	1.52E+00	7.62E-01
Benzo(b)fluoranthene	3.1975	0	3.1975	1.95871906	1.3	2.6	1.51E+00	7.53E-01
Benzo(g,h,i)perylene	1.71175	0	1.71175	1.048580876	1.3	2.6	8.07E-01	4.03E-01
Benzo(k)fluoranthene	1.0785	0	1.0785	0.660665678	1.3	2.6	5.08E-01	2.54E-01
Bis(2-ethylhexyl)phthalate	0.24375	0	0.24375	0.149315957	0.1833	1.833	8.15E-01	8.15E-02
Carbazole	0.28	0	0.28	0.171521919	1.3	2.6	1.32E-01	6.60E-02
Chrysene	2.745	0	2.745	1.681527387	1.3	2.6	1.29E+00	6.47E-01
Dibenzo(a,h)anthracene	0.63	0	0.63	0.385924318	1.3	2.6	2.97E-01	1.48E-01
Dibenzofuran	0.3975	0	0.3975	0.243499868	0	0	NA	NA
Fluoranthene	2.8525	0	2.8525	1.747379553	1.3	2.6	1.34E+00	6.72E-01
Fluorene	0.3075	0	0.3075	0.188367822	1.3	2.6	1.45E-01	7.24E-02
Indeno(1,2,3-cd)pyrene	1.48675	0	1.48675	0.910750762	1.3	2.6	7.01E-01	3.50E-01
Methylnaphthalene,2-	0.2855	0	0.2855	0.1748911	0	0	NA	NA
Naphthalene	0.4	0	0.4	0.245031313	0.05	0.5	NA	NA
Phenanthrene	1.8825	0	1.8825	1.153178618	1.3	2.6	8.87E-01	4.44E-01
Pyrene	3.5925	0	3.5925	2.200687482	1.3	2.6	1.69E+00	8.46E-01
Aluminum	4675	0	4675	2863.803474	1.93	19.3	1.48E+03	1.48E+02
Beryllium	0.17	0	0.17	0.104138308	0.54	5.4	1.93E-01	1.93E-02
Chromium	7.8	0	7.8	4.778110608	0.025	0.25	1.91E+02	1.91E+01
Cyanide	0.12	0	0.12	0.073509394	0.8	8	9.19E-02	9.19E-03
Iron	5647.5	0	5647.5	3459.535854	50	500	6.92E+01	6.92E+00
Lead	24.83	0	24.83	15.21031877	0.15	1.5	1.01E+02	1.01E+01
Mercury	0.08	0	0.08	0.049006263	0.05	0.5	9.80E-01	9.80E-02
Nickel	3.65	0	3.65	2.235910733	62.5	625	3.58E-02	3.58E-03
Vanadium	12.15	0	12.15	7.44282614	0.2	2	3.72E+01	3.72E+00
Zinc	51.38	0	51.38	31.47427219	25	250	1.26E+00	1.26E-01

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Meadow Vole
(Conservative Inputs)

Body Weight	0.0170000 kg
Food Ingestion Rate	0.0059500 kg/day
Water Ingestion Rate	0.0035700 L/day
Soil Ingestion Rate	0.0001428 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.43	0	0.43	0.154112	1.3	2.6	1.19E-01	5.93E-02
Acenaphthylene	2.8	0	2.8	1.00352	1.3	2.6	7.72E-01	3.86E-01
Anthracene	1.1	0	1.1	0.39424	1.3	2.6	3.03E-01	1.52E-01
Benzo(a)anthracene	6.5	0	6.5	2.3296	1.3	2.6	1.79E+00	8.96E-01
Benzo(a)pyrene	9.5	0	9.5	3.4048	1.3	2.6	2.62E+00	1.31E+00
Benzo(b)fluoranthene	8.5	0	8.5	3.0464	1.3	2.6	2.34E+00	1.17E+00
Benzo(g,h,i)perylene	5	0	5	1.792	1.3	2.6	1.38E+00	6.89E-01
Benzo(k)fluoranthene	3	0	3	1.0752	1.3	2.6	8.27E-01	4.14E-01
Bis(2-ethylhexyl)phthalate	0.17	0	0.17	0.060928	0.1833	1.833	3.32E-01	3.32E-02
Carbazole	0.54	0	0.54	0.193536	1.3	2.6	1.49E-01	7.44E-02
Chrysene	7.6	0	7.6	2.72384	1.3	2.6	2.10E+00	1.05E+00
Dibenzo(a,h)anthracene	1.7	0	1.7	0.60928	1.3	2.6	4.69E-01	2.34E-01
Dibenzofuran	0.38	0	0.38	0.136192	0	0	NA	NA
Fluoranthene	5.9	0	5.9	2.11456	1.3	2.6	1.63E+00	8.13E-01
Fluorene	0.51	0	0.51	0.182784	1.3	2.6	1.41E-01	7.03E-02
Indeno(1,2,3-cd)pyrene	4.3	0	4.3	1.54112	1.3	2.6	1.19E+00	5.93E-01
Methylnaphthalene,2-	0.094	0	0.094	0.0336896	0	0	NA	NA
Naphthalene	0.39	0	0.39	0.139776	0.05	0	NA	NA
Phenanthrene	4.4	0	4.4	1.57696	1.3	2.6	1.21E+00	6.07E-01
Pyrene	9.5	0	9.5	3.4048	1.3	2.6	2.62E+00	1.31E+00
Aluminum	5230	0	5230	1874.432	1.93	19.3	9.71E+02	9.71E+01
Beryllium	0.29	0	0.29	0.103936	1.3	5.4	8.00E-02	1.92E-02
Chromium	9.4	0	9.4	3.36896	0.025	0.25	1.35E+02	1.35E+01
Cyanide	0.19	0	0.19	0.068096	0.8	8	8.51E-02	8.51E-03
Iron	7380	0	7380	2644.992	50	500	5.29E+01	5.29E+00
Lead	29	0	29	10.3936	0.15	1.5	6.93E+01	6.93E+00
Mercury	0.13	0	0.13	0.046592	0.05	0.5	9.32E-01	9.32E-02
Nickel	4.5	0	4.5	1.6128	62.5	625	2.58E-02	2.58E-03
Vanadium	14.6	0	14.6	5.23264	0.2	2	2.62E+01	2.62E+00
Zinc	124	0	124	44.4416	25	250	1.78E+00	1.78E-01

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Meadow Vole
(Conservative Inputs)

Body Weight	0.0170000 kg
Food Ingestion Rate	0.0059500 kg/day
Water Ingestion Rate	0.0035700 L/day
Soil Ingestion Rate	0.0001428 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.2575	0	0.2575	0.092	1.3	2.6	7.10E-02	3.55E-02
Acenaphthylene	1.14875	0	1.14875	0.412	1.3	2.6	3.17E-01	1.58E-01
Anthracene	0.605	0	0.605	0.217	1.3	2.6	1.67E-01	8.34E-02
Benzo(a)anthracene	2.365	0	2.365	0.848	1.3	2.6	6.52E-01	3.26E-01
Benzo(a)pyrene	3.235	0	3.235	1.159	1.3	2.6	8.92E-01	4.46E-01
Benzo(b)fluoranthene	3.1975	0	3.1975	1.146	1.3	2.6	8.82E-01	4.41E-01
Benzo(g,h,i)perylene	1.71175	0	1.71175	0.613	1.3	2.6	4.72E-01	2.36E-01
Benzo(k)fluoranthene	1.0785	0	1.0785	0.387	1.3	2.6	2.97E-01	1.49E-01
Bis(2-ethylhexyl)phthalate	0.24375	0	0.24375	0.087	0.1833	1.833	4.77E-01	4.77E-02
Carbazole	0.28	0	0.28	0.100	1.3	2.6	7.72E-02	3.86E-02
Chrysene	2.745	0	2.745	0.984	1.3	2.6	7.57E-01	3.78E-01
Dibenzo(a,h)anthracene	0.63	0	0.63	0.226	1.3	2.6	1.74E-01	8.68E-02
Dibenzofuran	0.3975	0	0.3975	0.142	0	0	NA	NA
Fluoranthene	2.8525	0	2.8525	1.022	1.3	2.6	7.86E-01	3.93E-01
Fluorene	0.3075	0	0.3075	0.110	1.3	2.6	8.48E-02	4.24E-02
Indeno(1,2,3-cd)pyrene	1.48675	0	1.48675	0.533	1.3	2.6	4.10E-01	2.05E-01
Methylnaphthalene,2-	0.2855	0	0.2855	0.102	0	0	NA	NA
Naphthalene	0.4	0	0.4	0.143	0.05	0	NA	NA
Phenanthrene	1.8825	0	1.8825	0.675	1.3	2.6	5.19E-01	2.59E-01
Pyrene	3.5925	0	3.5925	1.288	1.3	2.6	9.90E-01	4.95E-01
Aluminum	4675	0	4675	1675.520	1.93	19.3	8.68E+02	8.68E+01
Beryllium	0.17	0	0.17	0.061	0.54	5.4	1.13E-01	1.13E-02
Chromium	7.8	0	7.8	2.796	0.025	0.25	1.12E+02	1.12E+01
Cyanide	0.12	0	0.12	0.043	0.8	8	5.38E-02	5.38E-03
Iron	5647.5	0	5647.5	2024.064	50	500	4.05E+01	4.05E+00
Lead	24.83	0	24.83	8.899	0.15	1.5	5.93E+01	5.93E+00
Mercury	0.08	0	0.08	0.029	0.05	0.5	5.73E-01	5.73E-02
Nickel	3.65	0	3.65	1.308	62.5	625	2.09E-02	2.09E-03
Vanadium	12.15	0	12.15	4.355	0.2	2	2.18E+01	2.18E+00
Zinc	51.38	0	51.38	18.415	25	250	7.37E-01	7.37E-02

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Meadow Vole
(Less Conservative Inputs)

Body Weight	0.0328600 kg
Food Ingestion Rate	0.0106795 kg/day
Water Ingestion Rate	0.0057505 L/day
Soil Ingestion Rate	0.0002563 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.43	0	0.43	0.143104	1.3	2.6	1.10E-01	5.50E-02
Acenaphthylene	2.8	0	2.8	0.93184	1.3	2.6	7.17E-01	3.58E-01
Anthracene	1.1	0	1.1	0.36608	1.3	2.6	2.82E-01	1.41E-01
Benzo(a)anthracene	6.5	0	6.5	2.1632	1.3	2.6	1.66E+00	8.32E-01
Benzo(a)pyrene	9.5	0	9.5	3.1616	1.3	2.6	2.43E+00	1.22E+00
Benzo(b)fluoranthene	8.5	0	8.5	2.8288	1.3	2.6	2.18E+00	1.09E+00
Benzo(g,h,i)perylene	5	0	5	1.664	1.3	2.6	1.28E+00	6.40E-01
Benzo(k)fluoranthene	3	0	3	0.9984	1.3	2.6	7.68E-01	3.84E-01
Bis(2-ethylhexyl)phthalate	0.17	0	0.17	0.056576	0.1833	1.833	3.09E-01	3.09E-02
Carbazole	0.54	0	0.54	0.179712	1.3	2.6	1.38E-01	6.91E-02
Chrysene	7.6	0	7.6	2.52928	1.3	2.6	1.95E+00	9.73E-01
Dibenzo(a,h)anthracene	1.7	0	1.7	0.56576	1.3	2.6	4.35E-01	2.18E-01
Dibenzofuran	0.38	0	0.38	0.126464	0	0	NA	NA
Fluoranthene	5.9	0	5.9	1.96352	1.3	2.6	1.51E+00	7.55E-01
Fluorene	0.51	0	0.51	0.169728	1.3	2.6	1.31E-01	6.53E-02
Indeno(1,2,3-cd)pyrene	4.3	0	4.3	1.43104	1.3	2.6	1.10E+00	5.50E-01
Methylnaphthalene,2-	0.094	0	0.094	0.0312832	0	0	NA	NA
Naphthalene	0.39	0	0.39	0.129792	0.05	0.5	NA	NA
Phenanthrene	4.4	0	4.4	1.46432	1.3	2.6	1.13E+00	5.63E-01
Pyrene	9.5	0	9.5	3.1616	1.3	2.6	2.43E+00	1.22E+00
Aluminum	5230	0	5230	1740.544	1.93	19.3	9.02E+02	9.02E+01
Beryllium	0.29	0	0.29	0.096512	0.54	5.4	1.79E-01	1.79E-02
Chromium	9.4	0	9.4	3.12832	0.025	0.25	1.25E+02	1.25E+01
Cyanide	0.19	0	0.19	0.063232	0.8	8	7.90E-02	7.90E-03
Iron	7380	0	7380	2456.064	50	500	4.91E+01	4.91E+00
Lead	29	0	29	9.6512	0.15	1.5	6.43E+01	6.43E+00
Mercury	0.13	0	0.13	0.043264	0.05	0.5	8.65E-01	8.65E-02
Nickel	4.5	0	4.5	1.4976	62.5	625	2.40E-02	2.40E-03
Vanadium	14.6	0	14.6	4.85888	0.2	2	2.43E+01	2.43E+00
Zinc	124	0	124	41.2672	25	250	1.65E+00	1.65E-01

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Meadow Vole
(Less Conservative Inputs)

Body Weight	0.0328600 kg
Food Ingestion Rate	0.0106795 kg/day
Water Ingestion Rate	0.0057505 L/day
Soil Ingestion Rate	0.0002563 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.2575	0	0.2575	0.086	1.3	2.6	6.59E-02	3.30E-02
Acenaphthylene	1.14875	0	1.14875	0.382	1.3	2.6	2.94E-01	1.47E-01
Anthracene	0.605	0	0.605	0.201	1.3	2.6	1.55E-01	7.74E-02
Benzo(a)anthracene	2.365	0	2.365	0.787	1.3	2.6	6.05E-01	3.03E-01
Benzo(a)pyrene	3.235	0	3.235	1.077	1.3	2.6	8.28E-01	4.14E-01
Benzo(b)fluoranthene	3.1975	0	3.1975	1.064	1.3	2.6	8.19E-01	4.09E-01
Benzo(g,h,i)perylene	1.71175	0	1.71175	0.570	1.3	2.6	4.38E-01	2.19E-01
Benzo(k)fluoranthene	1.0785	0	1.0785	0.359	1.3	2.6	2.76E-01	1.38E-01
Bis(2-ethylhexyl)phthalate	0.24375	0	0.24375	0.081	0.1833	1.833	4.43E-01	4.43E-02
Carbazole	0.28	0	0.28	0.093	1.3	2.6	7.17E-02	3.58E-02
Chrysene	2.745	0	2.745	0.914	1.3	2.6	7.03E-01	3.51E-01
Dibenzo(a,h)anthracene	0.63	0	0.63	0.210	1.3	2.6	1.61E-01	8.06E-02
Dibenzofuran	0.3975	0	0.3975	0.132	0	0	NA	NA
Fluoranthene	2.8525	0	2.8525	0.949	1.3	2.6	7.30E-01	3.65E-01
Fluorene	0.3075	0	0.3075	0.102	1.3	2.6	7.87E-02	3.94E-02
Indeno(1,2,3-cd)pyrene	1.48675	0	1.48675	0.495	1.3	2.6	3.81E-01	1.90E-01
Methylnaphthalene,2-	0.2855	0	0.2855	0.095	0.05	0.5	NA	NA
Naphthalene	0.4	0	0.4	0.133	0.05	0.5	NA	NA
Phenanthrene	1.8825	0	1.8825	0.626	1.3	2.6	4.82E-01	2.41E-01
Pyrene	3.5925	0	3.5925	1.196	1.3	2.6	9.20E-01	4.60E-01
Aluminum	4675	0	4675	1555.840	1.93	19.3	8.06E+02	8.06E+01
Beryllium	0.17	0	0.17	0.057	0.54	5.4	1.05E-01	1.05E-02
Chromium	7.8	0	7.8	2.596	0.025	0.25	1.04E+02	1.04E+01
Cyanide	0.12	0	0.12	0.040	0.8	8	4.99E-02	4.99E-03
Iron	5647.5	0	5647.5	1879.488	50	500	3.76E+01	3.76E+00
Lead	24.83	0	24.83	8.263	0.15	1.5	5.51E+01	5.51E+00
Mercury	0.08	0	0.08	0.027	0.05	0.5	5.32E-01	5.32E-02
Nickel	3.65	0	3.65	1.215	62.5	625	1.94E-02	1.94E-03
Vanadium	12.15	0	12.15	4.044	0.2	2	2.02E+01	2.02E+00
Zinc	51.38	0	51.38	17.099	25	250	6.84E-01	6.84E-02

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Deer Mouse
(Conservative Inputs)

Body Weight	0.0150000 kg
Food Ingestion Rate	0.0028500 kg/day
Water Ingestion Rate	0.0019000 L/day
Soil Ingestion Rate	0.0000700 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invetebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.43	0	0.172	0.258	0.083706667	1.3	2.6	6.44E-02	3.22E-02
Acenaphthylene	2.8	0	1.12	1.68	0.545066667	1.3	2.6	4.19E-01	2.10E-01
Anthracene	1.1	0	0.44	0.66	0.214133333	1.3	2.6	1.65E-01	8.24E-02
Benzo(a)anthracene	6.5	0	2.6	3.9	1.265333333	1.3	2.6	9.73E-01	4.87E-01
Benzo(a)pyrene	9.5	0	3.8	5.7	1.849333333	1.3	2.6	1.42E+00	7.11E-01
Benzo(b)fluoranthene	8.5	0	3.4	5.1	1.654666667	1.3	2.6	1.27E+00	6.36E-01
Benzo(g,h,i)perylene	5	0	2	3	0.973333333	1.3	2.6	7.49E-01	3.74E-01
Benzo(k)fluoranthene	3	0	1.2	1.8	0.584	1.3	2.6	4.49E-01	2.25E-01
Bis(2-ethylhexyl)phthalate	0.17	0	0.068	0.102	0.033093333	0.1833	1.833	1.81E-01	1.81E-02
Carbazole	0.54	0	0.216	0.324	0.10512	1.3	2.6	8.09E-02	4.04E-02
Chrysene	7.6	0	3.04	4.56	1.479466667	1.3	2.6	1.14E+00	5.69E-01
Dibenzo(a,h)anthracene	1.7	0	0.68	1.02	0.330933333	1.3	2.6	2.55E-01	1.27E-01
Dibenzofuran	0.38	0	0.152	0.228	0.073973333	0	0	NA	NA
Fluoranthene	5.9	0	2.36	3.54	1.148533333	1.3	2.6	8.83E-01	4.42E-01
Fluorene	0.51	0	0.204	0.306	0.09928	1.3	2.6	7.64E-02	3.82E-02
Indeno(1,2,3-cd)pyrene	4.3	0	1.72	2.58	0.837066667	1.3	2.6	6.44E-01	3.22E-01
Methylnaphthalene,2-	0.094	0	0.0376	0.0564	0.018298667	0	0	NA	NA
Naphthalene	0.39	0	0.156	0.234	0.07592	0.05	0.5	NA	NA
Phenanthrene	4.4	0	1.76	2.64	0.856533333	1.3	2.6	6.59E-01	3.29E-01
Pyrene	9.5	0	3.8	5.7	1.849333333	1.3	2.6	1.42E+00	7.11E-01
Aluminum	5230	0	2092	3138	1018.106667	1.93	19.3	5.28E+02	5.28E+01
Beryllium	0.29	0	0.116	0.174	0.056453333	1.3	5.4	4.34E-02	1.05E-02
Chromium	9.4	0	3.76	5.64	1.829866667	0.025	0.25	7.32E+01	7.32E+00
Cyanide	0.19	0	0.076	0.114	0.036986667	0.8	8	4.62E-02	4.62E-03
Iron	7380	0	2952	4428	1436.64	50	500	2.87E+01	2.87E+00
Lead	29	0	11.6	17.4	5.645333333	0.15	1.5	3.76E+01	3.76E+00
Mercury	0.13	0	0.052	0.078	0.025306667	0.05	0.5	5.06E-01	5.06E-02
Nickel	4.5	0	1.8	2.7	0.876	62.5	625	1.40E-02	1.40E-03
Vanadium	14.6	0	5.84	8.76	2.842133333	0.2	2	1.42E+01	1.42E+00
Zinc	124	0	49.6	74.4	24.13866667	25	250	9.66E-01	9.66E-02

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Deer Mouse
(Conservative Inputs)

Body Weight	0.0150000 kg
Food Ingestion Rate	0.0028500 kg/day
Water Ingestion Rate	0.0019000 L/day
Soil Ingestion Rate	0.0000700 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertabrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.2575	0	0.103	0.1545	0.050126667	1.3	2.6	3.86E-02	1.93E-02
Acenaphthylene	1.14875	0	0.4595	0.68925	0.223623333	1.3	2.6	1.72E-01	8.60E-02
Anthracene	0.605	0	0.242	0.363	0.117773333	1.3	2.6	9.06E-02	4.53E-02
Benzo(a)anthracene	2.365	0	0.946	1.419	0.460386667	1.3	2.6	3.54E-01	1.77E-01
Benzo(a)pyrene	3.235	0	1.294	1.941	0.629746667	1.3	2.6	4.84E-01	2.42E-01
Benzo(b)fluoranthene	3.1975	0	1.279	1.9185	0.622446667	1.3	2.6	4.79E-01	2.39E-01
Benzo(g,h,i)perylene	1.71175	0	0.6847	1.02705	0.333220667	1.3	2.6	2.56E-01	1.28E-01
Benzo(k)fluoranthene	1.0785	0	0.4314	0.6471	0.209948	1.3	2.6	1.61E-01	8.07E-02
Bis(2-ethylhexyl)phthalate	0.24375	0	0.0975	0.14625	0.04745	0.1833	1.833	2.59E-01	2.59E-02
Carbazole	0.28	0	0.112	0.168	0.054506667	1.3	2.6	4.19E-02	2.10E-02
Chrysene	2.745	0	1.098	1.647	0.53436	1.3	2.6	4.11E-01	2.06E-01
Dibenzo(a,h)anthracene	0.63	0	0.252	0.378	0.12264	1.3	2.6	9.43E-02	4.72E-02
Dibenzofuran	0.3975	0	0.159	0.2385	0.07738	0	0	NA	NA
Fluoranthene	2.8525	0	1.141	1.7115	0.555286667	1.3	2.6	4.27E-01	2.14E-01
Fluorene	0.3075	0	0.123	0.1845	0.05986	1.3	2.6	4.60E-02	2.30E-02
Indeno(1,2,3-cd)pyrene	1.48675	0	0.5947	0.89205	0.289420667	1.3	2.6	2.23E-01	1.11E-01
Methylnaphthalene,2-	0.2855	0	0.1142	0.1713	0.055577333	0	0	NA	NA
Naphthalene	0.4	0	0.16	0.24	0.077866667	0.05	0.5	NA	NA
Phenanthrene	1.8825	0	0.753	1.1295	0.36646	1.3	2.6	2.82E-01	1.41E-01
Pyrene	3.5925	0	1.437	2.1555	0.69934	1.3	2.6	5.38E-01	2.69E-01
Aluminum	4675	0	1870	2805	910.0666667	1.93	19.3	4.72E+02	4.72E+01
Beryllium	0.17	0	0.068	0.102	0.033093333	1.3	5.4	2.55E-02	6.13E-03
Chromium	7.8	0	3.12	4.68	1.5184	0.025	0.25	6.07E+01	6.07E+00
Cyanide	0.12	0	0.048	0.072	0.02336	0.8	8	2.92E-02	2.92E-03
Iron	5647.5	0	2259	3388.5	1099.38	50	500	2.20E+01	2.20E+00
Lead	24.83	0	9.932	14.898	4.833573333	0.15	1.5	3.22E+01	3.22E+00
Mercury	0.08	0	0.032	0.048	0.015573333	0.05	0.5	3.11E-01	3.11E-02
Nickel	3.65	0	1.46	2.19	0.710533333	62.5	625	1.14E-02	1.14E-03
Vanadium	12.15	0	4.86	7.29	2.3652	0.2	2	1.18E+01	1.18E+00
Zinc	51.38	0	20.552	30.828	10.00197333	25	250	4.00E-01	4.00E-02

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Deer Mouse
(Less Conservative Inputs)

Body Weight	0.0193600 kg
Food Ingestion Rate	0.0037752 kg/day
Water Ingestion Rate	0.0036784 L/day
Soil Ingestion Rate	0.0000755 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invetebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.43	0	0.172	0.258	0.085526911	1.3	2.6	6.58E-02	3.29E-02
Acenaphthylene	2.8	0	1.12	1.68	0.556919421	1.3	2.6	4.28E-01	2.14E-01
Anthracene	1.1	0	0.44	0.66	0.218789773	1.3	2.6	1.68E-01	8.41E-02
Benzo(a)anthracene	6.5	0	2.6	3.9	1.292848657	1.3	2.6	9.94E-01	4.97E-01
Benzo(a)pyrene	9.5	0	3.8	5.7	1.889548037	1.3	2.6	1.45E+00	7.27E-01
Benzo(b)fluoranthene	8.5	0	3.4	5.1	1.690648244	1.3	2.6	1.30E+00	6.50E-01
Benzo(g,h,i)perylene	5	0	2	3	0.994498967	1.3	2.6	7.65E-01	3.82E-01
Benzo(k)fluoranthene	3	0	1.2	1.8	0.59669938	1.3	2.6	4.59E-01	2.29E-01
Bis(2-ethylhexyl)phthalate	0.17	0	0.068	0.102	0.033812965	0.1833	1.833	1.84E-01	1.84E-02
Carbazole	0.54	0	0.216	0.324	0.107405888	1.3	2.6	8.26E-02	4.13E-02
Chrysene	7.6	0	3.04	4.56	1.51163843	1.3	2.6	1.16E+00	5.81E-01
Dibenzo(a,h)anthracene	1.7	0	0.68	1.02	0.338129649	1.3	2.6	2.60E-01	1.30E-01
Dibenzofuran	0.38	0	0.152	0.228	0.075581921	0	0	NA	NA
Fluoranthene	5.9	0	2.36	3.54	1.173508781	1.3	2.6	9.03E-01	4.51E-01
Fluorene	0.51	0	0.204	0.306	0.101438895	1.3	2.6	7.80E-02	3.90E-02
Indeno(1,2,3-cd)pyrene	4.3	0	1.72	2.58	0.855269112	1.3	2.6	6.58E-01	3.29E-01
Methylnaphthalene,2-	0.094	0	0.0376	0.0564	0.018696581	0.05	0.5	NA	NA
Naphthalene	0.39	0	0.156	0.234	0.077570919	0.05	0.5	NA	NA
Phenanthrene	4.4	0	1.76	2.64	0.875159091	1.3	2.6	6.73E-01	3.37E-01
Pyrene	9.5	0	3.8	5.7	1.889548037	1.3	2.6	1.45E+00	7.27E-01
Aluminum	5230	0	2092	3138	1040.245919	1.93	19.3	5.39E+02	5.39E+01
Beryllium	0.29	0	0.116	0.174	0.05768094	0.54	5.4	1.07E-01	1.07E-02
Chromium	9.4	0	3.76	5.64	1.869658058	0.025	0.25	7.48E+01	7.48E+00
Cyanide	0.19	0	0.076	0.114	0.037790961	0.8	8	4.72E-02	4.72E-03
Iron	7380	0	2952	4428	1467.880475	50	500	2.94E+01	2.94E+00
Lead	29	0	11.6	17.4	5.768094008	0.15	1.5	3.85E+01	3.85E+00
Mercury	0.13	0	0.052	0.078	0.025856973	0.05	0.5	5.17E-01	5.17E-02
Nickel	4.5	0	1.8	2.7	0.89504907	62.5	625	1.43E-02	1.43E-03
Vanadium	14.6	0	5.84	8.76	2.903936983	0.2	2	1.45E+01	1.45E+00
Zinc	124	0	49.6	74.4	24.66357438	25	250	9.87E-01	9.87E-02

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 - Soil Area of Concern
Naval Weapons Station Yorktown
Yorktown, Virginia

Deer Mouse
(Less Conservative Inputs)

Body Weight	0.0193600 kg
Food Ingestion Rate	0.0037752 kg/day
Water Ingestion Rate	0.0036784 L/day
Soil Ingestion Rate	0.0000755 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertabrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Acenaphthene	0.2575	0	0.103	0.1545	0.051216697	1.3	2.6	3.94E-02	1.97E-02
Acenaphthylene	1.14875	0	0.4595	0.68925	0.228486138	1.3	2.6	1.76E-01	8.79E-02
Anthracene	0.605	0	0.242	0.363	0.120334375	1.3	2.6	9.26E-02	4.63E-02
Benzo(a)anthracene	2.365	0	0.946	1.419	0.470398011	1.3	2.6	3.62E-01	1.81E-01
Benzo(a)pyrene	3.235	0	1.294	1.941	0.643440832	1.3	2.6	4.95E-01	2.47E-01
Benzo(b)fluoranthene	3.1975	0	1.279	1.9185	0.635982089	1.3	2.6	4.89E-01	2.45E-01
Benzo(g,h,i)perylene	1.71175	0	0.6847	1.02705	0.340466721	1.3	2.6	2.62E-01	1.31E-01
Benzo(k)fluoranthene	1.0785	0	0.4314	0.6471	0.214513427	1.3	2.6	1.65E-01	8.25E-02
Bis(2-ethylhexyl)phthalate	0.24375	0	0.0975	0.14625	0.048481825	0.1833	1.833	2.64E-01	2.64E-02
Carbazole	0.28	0	0.112	0.168	0.055691942	1.3	2.6	4.28E-02	2.14E-02
Chrysene	2.745	0	1.098	1.647	0.545979933	1.3	2.6	4.20E-01	2.10E-01
Dibenzo(a,h)anthracene	0.63	0	0.252	0.378	0.12530687	1.3	2.6	9.64E-02	4.82E-02
Dibenzofuran	0.3975	0	0.159	0.2385	0.079062668	0	0	NA	NA
Fluoranthene	2.8525	0	1.141	1.7115	0.567361661	1.3	2.6	4.36E-01	2.18E-01
Fluorene	0.3075	0	0.123	0.1845	0.061161686	1.3	2.6	4.70E-02	2.35E-02
Indeno(1,2,3-cd)pyrene	1.48675	0	0.5947	0.89205	0.295714268	1.3	2.6	2.27E-01	1.14E-01
Methylnaphthalene,2-	0.2855	0	0.1142	0.1713	0.056785891	0.05	0.5	NA	NA
Naphthalene	0.4	0	0.16	0.24	0.079559917	0.05	0.5	NA	NA
Phenanthrene	1.8825	0	0.753	1.1295	0.374428861	1.3	2.6	2.88E-01	1.44E-01
Pyrene	3.5925	0	1.437	2.1555	0.714547508	1.3	2.6	5.50E-01	2.75E-01
Aluminum	4675	0	1870	2805	929.8565341	1.93	19.3	4.82E+02	4.82E+01
Beryllium	0.17	0	0.068	0.102	0.033812965	0.54	5.4	6.26E-02	6.26E-03
Chromium	7.8	0	3.12	4.68	1.551418388	0.025	0.25	6.21E+01	6.21E+00
Cyanide	0.12	0	0.048	0.072	0.023867975	0.8	8	2.98E-02	2.98E-03
Iron	5647.5	0	2259	3388.5	1123.286583	50	500	2.25E+01	2.25E+00
Lead	24.83	0	9.932	14.898	4.93868187	0.15	1.5	3.29E+01	3.29E+00
Mercury	0.08	0	0.032	0.048	0.015911983	0.05	0.5	3.18E-01	3.18E-02
Nickel	3.65	0	1.46	2.19	0.725984246	62.5	625	1.16E-02	1.16E-03
Vanadium	12.15	0	4.86	7.29	2.41663249	0.2	2	1.21E+01	1.21E+00
Zinc	51.38	0	20.552	30.828	10.21947138	25	250	4.09E-01	4.09E-02

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

APPENDIX M.5
SITE 17 - PROPER
TERRESTRIAL RECEPTOR MODELS

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

American Woodcock
(Conservative Inputs)

Body Weight	0.1650000	kg
Food Ingestion Rate	0.0830000	kg/day
Water Ingestion Rate	0.0169380	L/day
Soil Ingestion Rate	0.0075000	kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworm Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.26	0	0.26	0.142606061	10	100	1.43E-02	1.43E-03
Benzo(a)pyrene	0.2	0	0.2	0.10969697	10	100	1.10E-02	1.10E-03
Benzo(b)fluoranthene	0.29	0	0.29	0.159060606	10	100	1.59E-02	1.59E-03
Benzo(k)fluoranthene	0.14	0	0.14	0.076787879	10	100	7.68E-03	7.68E-04
Bis(2-ethylhexyl)phthalate	1.3	0	1.3	0.713030303	1.11	11.1	6.42E-01	6.42E-02
Carbazole	0.065	0	0.065	0.035651515	10	100	3.57E-03	3.57E-04
Chrysene	0.3	0	0.3	0.164545455	10	100	1.65E-02	1.65E-03
Dibenzofuran	0.043	0	0.043	0.023584848	0	0	NA	NA
Fluoranthene	0.55	0	0.55	0.301666667	10	100	3.02E-02	3.02E-03
Indeno(1,2,3-cd)pyrene	0.11	0	0.11	0.060333333	10	100	6.03E-03	6.03E-04
Phenanthrene	0.64	0	0.64	0.351030303	10	100	3.51E-02	3.51E-03
Pyrene	0.46	0	0.46	0.25230303	10	100	2.52E-02	2.52E-03
Aluminum	7950	0	7950	4360.454545	109.7	1097	3.97E+01	3.97E+00
Chromium	15	0	15	8.227272727	0.1	1	8.23E+01	8.23E+00
Copper	27.6	0	27.6	15.13818182	0.235	2.35	6.44E+01	6.44E+00
Cyanide	0.26	0	0.26	0.142606061	4.5	45	3.17E-02	3.17E-03
Iron	12300	0	12300	6746.363636	100	1000	6.75E+01	6.75E+00
Lead	19.4	0	19.4	10.64060606	0.3	3	3.55E+01	3.55E+00
Mercury	0.19	0	0.19	0.104212121	0.01	0.1	1.04E+01	1.04E+00
Nickel	6.2	0	6.2	3.400606061	0	0	NA	NA
Vanadium	19	0	19	10.42121212	11.38	113.8	9.16E-01	9.16E-02
Zinc	39.9	0	39.9	21.88454545	13.9	139	1.57E+00	1.57E-01

NA - Not applicable
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

American Woodcock
(Conservative Inputs)

Body Weight	0.1650000	kg
Food Ingestion Rate	0.0830000	kg/day
Water Ingestion Rate	0.0169380	L/day
Soil Ingestion Rate	0.0075000	kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworn Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.1812	0	0.1812	0.099385455	10	100	9.94E-03	9.94E-04
Benzo(a)pyrene	0.1911	0	0.1911	0.104815455	10	100	1.05E-02	1.05E-03
Benzo(b)fluoranthene	0.17315	0	0.17315	0.094970152	10	100	9.50E-03	9.50E-04
Benzo(k)fluoranthene	0.1759	0	0.1759	0.096478485	10	100	9.65E-03	9.65E-04
Bis(2-ethylhexyl)phthalate	0.2237	0	0.2237	0.122696061	1.11	11.1	1.11E-01	1.11E-02
Carbazole	0.19465	0	0.19465	0.106762576	10	100	1.07E-02	1.07E-03
Chrysene	0.16985	0	0.16985	0.093160152	10	100	9.32E-03	9.32E-04
Dibenzofuran	0.2019	0	0.2019	0.110739091	0	0	NA	NA
Fluoranthene	0.19525	0	0.19525	0.107091667	10	100	1.07E-02	1.07E-03
Indeno(1,2,3-cd)pyrene	0.18995	0	0.18995	0.104184697	10	100	1.04E-02	1.04E-03
Phenanthrene	0.2283	0	0.2283	0.125219091	10	100	1.25E-02	1.25E-03
Pyrene	0.18695	0	0.18695	0.102539242	10	100	1.03E-02	1.03E-03
Aluminum	4559	0	4559	2500.542424	109.7	1097	2.28E+01	2.28E+00
Chromium	6.46	0	6.46	3.543212121	0.1	1	3.54E+01	3.54E+00
Copper	4.09	0	4.09	2.24330303	0.235	2.35	9.55E+00	9.55E-01
Cyanide	0.11	0	0.11	0.060333333	4.5	45	1.34E-02	1.34E-03
Iron	5411	0	5411	2967.851515	100	1000	2.97E+01	2.97E+00
Lead	9.15	0	9.15	5.018636364	0.3	3	1.67E+01	1.67E+00
Mercury	0.08	0	0.08	0.043878788	0.01	0.1	4.39E+00	4.39E-01
Nickel	3.1	0	3.1	1.70030303	0	0	NA	NA
Vanadium	11.93	0	11.93	6.543424242	11.38	113.8	5.75E-01	5.75E-02
Zinc	15.3	0	15.3	8.391818182	13.9	139	6.04E-01	6.04E-02

NA - Not applicable
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

American Woodcock
(Less Conservative Inputs)

Body Weight	0.1693800	kg
Food Ingestion Rate	0.1304226	kg/day
Water Ingestion Rate	0.0169380	L/day
Soil Ingestion Rate	0.0135640	kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworm Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.26	0	0.26	0.221020799	10	100	2.21E-02	2.21E-03
Benzo(a)pyrene	0.2	0	0.2	0.170016	10	100	1.70E-02	1.70E-03
Benzo(b)fluoranthene	0.29	0	0.29	0.246523199	10	100	2.47E-02	2.47E-03
Benzo(k)fluoranthene	0.14	0	0.14	0.1190112	10	100	1.19E-02	1.19E-03
Bis(2-ethylhexyl)phthalate	1.3	0	1.3	1.105103997	1.11	11.1	9.96E-01	9.96E-02
Carbazole	0.065	0	0.065	0.0552552	10	100	5.53E-03	5.53E-04
Chrysene	0.3	0	0.3	0.255023999	10	100	2.55E-02	2.55E-03
Dibenzofuran	0.043	0	0.043	0.03655344	0	0	NA	NA
Fluoranthene	0.55	0	0.55	0.467543999	10	100	4.68E-02	4.68E-03
Indeno(1,2,3-cd)pyrene	0.11	0	0.11	0.0935088	10	100	9.35E-03	9.35E-04
Phenanthrene	0.64	0	0.64	0.544051198	10	100	5.44E-02	5.44E-03
Pyrene	0.46	0	0.46	0.391036799	10	100	3.91E-02	3.91E-03
Aluminum	7950	0	7950	6758.135981	109.7	1097	6.16E+01	6.16E+00
Chromium	15	0	15	12.75119996	0.1	1	1.28E+02	1.28E+01
Copper	27.6	0	27.6	23.46220793	0.235	2.35	9.98E+01	9.98E+00
Cyanide	0.26	0	0.26	0.221020799	4.5	45	4.91E-02	4.91E-03
Iron	12300	0	12300	10455.98397	100	1000	1.05E+02	1.05E+01
Lead	19.4	0	19.4	16.49155195	0.3	3	5.50E+01	5.50E+00
Mercury	0.19	0	0.19	0.1615152	0.01	0.1	1.62E+01	1.62E+00
Nickel	6.2	0	6.2	5.270495985	0	0	NA	NA
Vanadium	19	0	19	16.15151996	11.38	113.8	1.42E+00	1.42E-01
Zinc	39.9	0	39.9	33.91819191	13.9	139	2.44E+00	2.44E-01

NA - Not applicable
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

American Woodcock
(Less Conservative Inputs)

Body Weight	0.1693800 kg
Food Ingestion Rate	0.1304226 kg/day
Water Ingestion Rate	0.0169380 L/day
Soil Ingestion Rate	0.0135640 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworm Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.1812	0	0.1812	0.154034496	10	100	1.54E-02	1.54E-03
Benzo(a)pyrene	0.1911	0	0.1911	0.162450288	10	100	1.62E-02	1.62E-03
Benzo(b)fluoranthene	0.17315	0	0.17315	0.147191352	10	100	1.47E-02	1.47E-03
Benzo(k)fluoranthene	0.1759	0	0.1759	0.149529072	10	100	1.50E-02	1.50E-03
Bis(2-ethylhexyl)phthalate	0.2237	0	0.2237	0.190162895	1.11	11.1	1.71E-01	1.71E-02
Carbazole	0.19465	0	0.19465	0.165468072	10	100	1.65E-02	1.65E-03
Chrysene	0.16985	0	0.16985	0.144386088	10	100	1.44E-02	1.44E-03
Dibenzofuran	0.2019	0	0.2019	0.171631152	0	0	NA	NA
Fluoranthene	0.19525	0	0.19525	0.16597812	10	100	1.66E-02	1.66E-03
Indeno(1,2,3-cd)pyrene	0.18995	0	0.18995	0.161472696	10	100	1.61E-02	1.61E-03
Phenanthrene	0.2283	0	0.2283	0.194073263	10	100	1.94E-02	1.94E-03
Pyrene	0.18695	0	0.18695	0.158922456	10	100	1.59E-02	1.59E-03
Aluminum	4559	0	4559	3875.514709	109.7	1097	3.53E+01	3.53E+00
Chromium	6.46	0	6.46	5.491516785	0.1	1	5.49E+01	5.49E+00
Copper	4.09	0	4.09	3.47682719	0.235	2.35	1.48E+01	1.48E+00
Cyanide	0.11	0	0.11	0.0935088	4.5	45	2.08E-02	2.08E-03
Iron	5411	0	5411	4599.782867	100	1000	4.60E+01	4.60E+00
Lead	9.15	0	9.15	7.778231978	0.3	3	2.59E+01	2.59E+00
Mercury	0.08	0	0.08	0.0680064	0.01	0.1	6.80E+00	6.80E-01
Nickel	3.1	0	3.1	2.635247993	0	0	NA	NA
Vanadium	11.93	0	11.93	10.14145437	11.38	113.8	8.91E-01	8.91E-02
Zinc	15.3	0	15.3	13.00622396	13.9	139	9.36E-01	9.36E-02

NA - Not applicable
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Red-Tailed Hawk
(Conservative Inputs)

Body Weight	0.9570000 kg
Food Ingestion Rate	0.4000000 kg/day
Water Ingestion Rate	0.0564600 L/day
Soil Ingestion Rate	0.0028000 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.26	0	0.26	0.109433647	10	100	1.09E-02	1.09E-03
Benzo(a)pyrene	0.2	0	0.2	0.084179728	10	100	8.42E-03	8.42E-04
Benzo(b)fluoranthene	0.29	0	0.29	0.122060606	10	100	1.22E-02	1.22E-03
Benzo(k)fluoranthene	0.14	0	0.14	0.05892581	10	100	5.89E-03	5.89E-04
Bis(2-ethylhexyl)phthalate	1.3	0	1.3	0.547168234	1.11	11.1	4.93E-01	4.93E-02
Carbazole	0.065	0	0.065	0.027358412	10	100	2.74E-03	2.74E-04
Chrysene	0.3	0	0.3	0.126269592	10	100	1.26E-02	1.26E-03
Dibenzofuran	0.043	0	0.043	0.018098642	0	0	NA	NA
Fluoranthene	0.55	0	0.55	0.231494253	10	100	2.31E-02	2.31E-03
Indeno(1,2,3-cd)pyrene	0.11	0	0.11	0.046298851	10	100	4.63E-03	4.63E-04
Phenanthrene	0.64	0	0.64	0.269375131	10	100	2.69E-02	2.69E-03
Pyrene	0.46	0	0.46	0.193613375	10	100	1.94E-02	1.94E-03
Aluminum	7950	0	7950	3346.144201	109.7	1097	3.05E+01	3.05E+00
Chromium	15	0	15	6.313479624	0.1	1	6.31E+01	6.31E+00
Copper	27.6	0	27.6	11.61680251	0.235	2.35	4.94E+01	4.94E+00
Cyanide	0.26	0	0.26	0.109433647	4.5	45	2.43E-02	2.43E-03
Iron	12300	0	12300	5177.053292	100	1000	5.18E+01	5.18E+00
Lead	19.4	0	19.4	8.165433647	0.3	3	2.72E+01	2.72E+00
Mercury	0.19	0	0.19	0.079970742	0.01	0.1	8.00E+00	8.00E-01
Nickel	6.2	0	6.2	2.609571578	0	0	NA	NA
Vanadium	19	0	19	7.99707419	11.38	113.8	7.03E-01	7.03E-02
Zinc	39.9	0	39.9	16.7938558	13.9	139	1.21E+00	1.21E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Red-Tailed Hawk
(Conservative Inputs)

Body Weight	0.9570000	kg
Food Ingestion Rate	0.4000000	kg/day
Water Ingestion Rate	0.0564600	L/day
Soil Ingestion Rate	0.0028000	kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.1812	0	0.1812	0.076266834	10	100	7.63E-03	7.63E-04
Benzo(a)pyrene	0.1911	0	0.1911	0.08043373	10	100	8.04E-03	8.04E-04
Benzo(b)fluoranthene	0.17315	0	0.17315	0.0728786	10	100	7.29E-03	7.29E-04
Benzo(k)fluoranthene	0.1759	0	0.1759	0.074036071	10	100	7.40E-03	7.40E-04
Bis(2-ethylhexyl)phthalate	0.2237	0	0.2237	0.094155026	1.11	11.1	8.48E-02	8.48E-03
Carbazole	0.19465	0	0.19465	0.081927921	10	100	8.19E-03	8.19E-04
Chrysene	0.16985	0	0.16985	0.071489634	10	100	7.15E-03	7.15E-04
Dibenzofuran	0.2019	0	0.2019	0.084979436	0	0	NA	NA
Fluoranthene	0.19525	0	0.19525	0.08218046	10	100	8.22E-03	8.22E-04
Indeno(1,2,3-cd)pyrene	0.18995	0	0.18995	0.079949697	10	100	7.99E-03	7.99E-04
Phenanthrene	0.2283	0	0.2283	0.09609116	10	100	9.61E-03	9.61E-04
Pyrene	0.18695	0	0.18695	0.078687001	10	100	7.87E-03	7.87E-04
Aluminum	4559	0	4559	1918.876907	109.7	1097	1.75E+01	1.75E+00
Chromium	6.46	0	6.46	2.719005225	0.1	1	2.72E+01	2.72E+00
Copper	4.09	0	4.09	1.721475444	0.235	2.35	7.33E+00	7.33E-01
Cyanide	0.11	0	0.11	0.046298851	4.5	45	1.03E-02	1.03E-03
Iron	5411	0	5411	2277.48255	100	1000	2.28E+01	2.28E+00
Lead	9.15	0	9.15	3.851222571	0.3	3	1.28E+01	1.28E+00
Mercury	0.08	0	0.08	0.033671891	0.01	0.1	3.37E+00	3.37E-01
Nickel	3.1	0	3.1	1.304785789	0	0	NA	NA
Vanadium	11.93	0	11.93	5.021320794	11.38	113.8	4.41E-01	4.41E-02
Zinc	15.3	0	15.3	6.439749216	13.9	139	4.63E-01	4.63E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Red-Tailed Hawk
(Less Conservative Inputs)

Body Weight	1.1340000 kg
Food Ingestion Rate	0.1120000 kg/day
Water Ingestion Rate	0.0646400 L/day
Soil Ingestion Rate	0.0030000 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.26	0	0.26	0.026366843	10	100	2.64E-03	2.64E-04
Benzo(a)pyrene	0.2	0	0.2	0.020282187	10	100	2.03E-03	2.03E-04
Benzo(b)fluoranthene	0.29	0	0.29	0.029409171	10	100	2.94E-03	2.94E-04
Benzo(k)fluoranthene	0.14	0	0.14	0.014197531	10	100	1.42E-03	1.42E-04
Bis(2-ethylhexyl)phthalate	1.3	0	1.3	0.131834215	1.11	11.1	1.19E-01	1.19E-02
Carbazole	0.065	0	0.065	0.006591711	10	100	6.59E-04	6.59E-05
Chrysene	0.3	0	0.3	0.03042328	10	100	3.04E-03	3.04E-04
Dibenzofuran	0.043	0	0.043	0.00436067	0	0	NA	NA
Fluoranthene	0.55	0	0.55	0.055776014	10	100	5.58E-03	5.58E-04
Indeno(1,2,3-cd)pyrene	0.11	0	0.11	0.011155203	10	100	1.12E-03	1.12E-04
Phenanthrene	0.64	0	0.64	0.064902998	10	100	6.49E-03	6.49E-04
Pyrene	0.46	0	0.46	0.04664903	10	100	4.66E-03	4.66E-04
Aluminum	7950	0	7950	806.2169312	109.7	1097	7.35E+00	7.35E-01
Chromium	15	0	15	1.521164021	0.1	1	1.52E+01	1.52E+00
Copper	27.6	0	27.6	2.798941799	0.235	2.35	1.19E+01	1.19E+00
Cyanide	0.26	0	0.26	0.026366843	4.5	45	5.86E-03	5.86E-04
Iron	12300	0	12300	1247.354497	100	1000	1.25E+01	1.25E+00
Lead	19.4	0	19.4	1.967372134	0.3	3	6.56E+00	6.56E-01
Mercury	0.19	0	0.19	0.019268078	0.01	0.1	1.93E+00	1.93E-01
Nickel	6.2	0	6.2	0.628747795	0	0	NA	NA
Vanadium	19	0	19	1.92680776	11.38	113.8	1.69E-01	1.69E-02
Zinc	39.9	0	39.9	4.046296296	13.9	139	2.91E-01	2.91E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Red-Tailed Hawk
(Less Conservative Inputs)

Body Weight	1.1340000 kg
Food Ingestion Rate	0.1120000 kg/day
Water Ingestion Rate	0.0646400 L/day
Soil Ingestion Rate	0.0030000 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.1812	0	0.1812	0.018375661	10	100	1.84E-03	1.84E-04
Benzo(a)pyrene	0.1911	0	0.1911	0.01937963	10	100	1.94E-03	1.94E-04
Benzo(b)fluoranthene	0.17315	0	0.17315	0.017559303	10	100	1.76E-03	1.76E-04
Benzo(k)fluoranthene	0.1759	0	0.1759	0.017838183	10	100	1.78E-03	1.78E-04
Bis(2-ethylhexyl)phthalate	0.2237	0	0.2237	0.022685626	1.11	11.1	2.04E-02	2.04E-03
Carbazole	0.19465	0	0.19465	0.019739638	10	100	1.97E-03	1.97E-04
Chrysene	0.16985	0	0.16985	0.017224647	10	100	1.72E-03	1.72E-04
Dibenzofuran	0.2019	0	0.2019	0.020474868	0	0	NA	NA
Fluoranthene	0.19525	0	0.19525	0.019800485	10	100	1.98E-03	1.98E-04
Indeno(1,2,3-cd)pyrene	0.18995	0	0.18995	0.019263007	10	100	1.93E-03	1.93E-04
Phenanthrene	0.2283	0	0.2283	0.023152116	10	100	2.32E-03	2.32E-04
Pyrene	0.18695	0	0.18695	0.018958774	10	100	1.90E-03	1.90E-04
Aluminum	4559	0	4559	462.3324515	109.7	1097	4.21E+00	4.21E-01
Chromium	6.46	0	6.46	0.655114638	0.1	1	6.55E+00	6.55E-01
Copper	4.09	0	4.09	0.414770723	0.235	2.35	1.76E+00	1.76E-01
Cyanide	0.11	0	0.11	0.011155203	4.5	45	2.48E-03	2.48E-04
Iron	5411	0	5411	548.7345679	100	1000	5.49E+00	5.49E-01
Lead	9.15	0	9.15	0.927910053	0.3	3	3.09E+00	3.09E-01
Mercury	0.08	0	0.08	0.008112875	0.01	0.1	8.11E-01	8.11E-02
Nickel	3.1	0	3.1	0.314373898	0	0	NA	NA
Vanadium	11.93	0	11.93	1.209832451	11.38	113.8	1.06E-01	1.06E-02
Zinc	15.3	0	15.3	1.551587302	13.9	139	1.12E-01	1.12E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

American Robin
(Conservative Inputs)

Body Weight	0.0773000 kg
Food Ingestion Rate	0.1175000 kg/day
Water Ingestion Rate	0.0108000 L/day
Soil Ingestion Rate	0.0352500 kg/day

Maximum Concentrations Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.26	0	0.26	0.51377749	10	100	5.14E-02	5.14E-03
Benzo(a)pyrene	0.2	0	0.2	0.395213454	10	100	3.95E-02	3.95E-03
Benzo(b)fluoranthene	0.29	0	0.29	0.573059508	10	100	5.73E-02	5.73E-03
Benzo(k)fluoranthene	0.14	0	0.14	0.276649418	10	100	2.77E-02	2.77E-03
Bis(2-ethylhexyl)phthalate	1.3	0	1.3	2.568887451	1.11	11.1	2.31E+00	2.31E-01
Carbazole	0.065	0	0.065	0.128444373	10	100	1.28E-02	1.28E-03
Chrysene	0.3	0	0.3	0.592820181	10	100	5.93E-02	5.93E-03
Dibenzofuran	0.043	0	0.043	0.084970893	0	0	NA	NA
Fluoranthene	0.55	0	0.55	1.086836999	10	100	1.09E-01	1.09E-02
Indeno(1,2,3-cd)pyrene	0.11	0	0.11	0.2173674	10	100	2.17E-02	2.17E-03
Phenanthrene	0.64	0	0.64	1.264683053	10	100	1.26E-01	1.26E-02
Pyrene	0.46	0	0.46	0.908990944	10	100	9.09E-02	9.09E-03
Aluminum	7950	0	7950	15709.7348	109.7	1097	1.43E+02	1.43E+01
Chromium	15	0	15	29.64100906	0.1	1	2.96E+02	2.96E+01
Copper	27.6	0	27.6	54.53945666	0.235	2.35	2.32E+02	2.32E+01
Cyanide	0.26	0	0.26	0.51377749	4.5	45	1.14E-01	1.14E-02
Iron	12300	0	12300	24305.62743	100	1000	2.43E+02	2.43E+01
Lead	19.4	0	19.4	38.33570505	0.3	3	1.28E+02	1.28E+01
Mercury	0.19	0	0.19	0.375452781	0.01	0.1	3.75E+01	3.75E+00
Nickel	6.2	0	6.2	12.25161708	0	0	NA	NA
Vanadium	19	0	19	37.54527814	11.38	113.8	3.30E+00	3.30E-01
Zinc	39.9	0	39.9	78.84508409	13.9	139	5.67E+00	5.67E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

American Robin
(Conservative Inputs)

Body Weight	0.0773000	kg
Food Ingestion Rate	0.1175000	kg/day
Water Ingestion Rate	0.0108000	L/day
Soil Ingestion Rate	0.0352500	kg/day

Mean Concentrations Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.1812	0	0.1812	0.358063389	10	100	3.58E-02	3.58E-03
Benzo(a)pyrene	0.1911	0	0.1911	0.377626455	10	100	3.78E-02	3.78E-03
Benzo(b)fluoranthene	0.17315	0	0.17315	0.342156048	10	100	3.42E-02	3.42E-03
Benzo(k)fluoranthene	0.1759	0	0.1759	0.347590233	10	100	3.48E-02	3.48E-03
Bis(2-ethylhexyl)phthalate	0.2237	0	0.2237	0.442046248	1.11	11.1	3.98E-01	3.98E-02
Carbazole	0.19465	0	0.19465	0.384641494	10	100	3.85E-02	3.85E-03
Chrysene	0.16985	0	0.16985	0.335635026	10	100	3.36E-02	3.36E-03
Dibenzofuran	0.2019	0	0.2019	0.398967982	0	0	NA	NA
Fluoranthene	0.19525	0	0.19525	0.385827135	10	100	3.86E-02	3.86E-03
Indeno(1,2,3-cd)pyrene	0.18995	0	0.18995	0.375353978	10	100	3.75E-02	3.75E-03
Phenanthrene	0.2283	0	0.2283	0.451136158	10	100	4.51E-02	4.51E-03
Pyrene	0.18695	0	0.18695	0.369425776	10	100	3.69E-02	3.69E-03
Aluminum	4559	0	4559	9008.890686	109.7	1097	8.21E+01	8.21E+00
Chromium	6.46	0	6.46	12.76539457	0.1	1	1.28E+02	1.28E+01
Copper	4.09	0	4.09	8.082115136	0.235	2.35	3.44E+01	3.44E+00
Cyanide	0.11	0	0.11	0.2173674	4.5	45	4.83E-02	4.83E-03
Iron	5411	0	5411	10692.5	100	1000	1.07E+02	1.07E+01
Lead	9.15	0	9.15	18.08101552	0.3	3	6.03E+01	6.03E+00
Mercury	0.08	0	0.08	0.158085382	0.01	0.1	1.58E+01	1.58E+00
Nickel	3.1	0	3.1	6.125808538	0	0	NA	NA
Vanadium	11.93	0	11.93	23.57448254	11.38	113.8	2.07E+00	2.07E-01
Zinc	15.3	0	15.3	30.23382924	13.9	139	2.18E+00	2.18E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

American Robin
(Less Conservative Inputs)

Body Weight	0.0810200	kg
Food Ingestion Rate	0.0976300	kg/day
Water Ingestion Rate	0.0113400	L/day
Soil Ingestion Rate	0.0292890	kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.26	0	0.26	0.407293755	10	100	4.07E-02	4.07E-03
Benzo(a)pyrene	0.2	0	0.2	0.313302888	10	100	3.13E-02	3.13E-03
Benzo(b)fluoranthene	0.29	0	0.29	0.454289188	10	100	4.54E-02	4.54E-03
Benzo(k)fluoranthene	0.14	0	0.14	0.219312022	10	100	2.19E-02	2.19E-03
Bis(2-ethylhexyl)phthalate	1.3	0	1.3	2.036468773	1.11	11.1	1.83E+00	1.83E-01
Carbazole	0.065	0	0.065	0.101823439	10	100	1.02E-02	1.02E-03
Chrysene	0.3	0	0.3	0.469954332	10	100	4.70E-02	4.70E-03
Dibenzofuran	0.043	0	0.043	0.067360121	0	0	NA	NA
Fluoranthene	0.55	0	0.55	0.861582942	1.11	100	7.76E-01	8.62E-03
Indeno(1,2,3-cd)pyrene	0.11	0	0.11	0.172316588	10	100	1.72E-02	1.72E-03
Phenanthrene	0.64	0	0.64	1.002569242	10	100	1.00E-01	1.00E-02
Pyrene	0.46	0	0.46	0.720596643	10	100	7.21E-02	7.21E-03
Aluminum	7950	0	7950	12453.7898	109.7	1097	1.14E+02	1.14E+01
Chromium	15	0	15	23.49771661	0.1	1	2.35E+02	2.35E+01
Copper	27.6	0	27.6	43.23579857	0.235	2.35	1.84E+02	1.84E+01
Cyanide	0.26	0	0.26	0.407293755	4.5	45	9.05E-02	9.05E-03
Iron	12300	0	12300	19268.12762	100	1000	1.93E+02	1.93E+01
Lead	19.4	0	19.4	30.39038015	0.3	3	1.01E+02	1.01E+01
Mercury	0.19	0	0.19	0.297637744	0.01	0.1	2.98E+01	2.98E+00
Nickel	6.2	0	6.2	9.712389533	0	0	NA	NA
Vanadium	19	0	19	29.76377438	11.38	113.8	2.62E+00	2.62E-01
Zinc	39.9	0	39.9	62.50392619	13.9	139	4.50E+00	4.50E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

American Robin
(Less Conservative Inputs)

Body Weight	0.0810200	kg
Food Ingestion Rate	0.0976300	kg/day
Water Ingestion Rate	0.0113400	L/day
Soil Ingestion Rate	0.0292890	kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.26	0	0.26	0.407293755	10	100	4.07E-02	4.07E-03
Benzo(a)pyrene	0.2	0	0.2	0.313302888	10	100	3.13E-02	3.13E-03
Benzo(b)fluoranthene	0.29	0	0.29	0.454289188	10	100	4.54E-02	4.54E-03
Benzo(k)fluoranthene	0.14	0	0.14	0.219312022	10	100	2.19E-02	2.19E-03
Bis(2-ethylhexyl)phthalate	1.3	0	1.3	2.036468773	1.11	11.1	1.83E+00	1.83E-01
Carbazole	0.065	0	0.065	0.101823439	10	100	1.02E-02	1.02E-03
Chrysene	0.3	0	0.3	0.469954332	10	100	4.70E-02	4.70E-03
Dibenzofuran	0.043	0	0.043	0.067360121	0	0	NA	NA
Fluoranthene	0.55	0	0.55	0.861582942	1.11	100	7.76E-01	8.62E-03
Indeno(1,2,3-cd)pyrene	0.11	0	0.11	0.172316588	10	100	1.72E-02	1.72E-03
Phenanthrene	0.64	0	0.64	1.002569242	10	100	1.00E-01	1.00E-02
Pyrene	0.46	0	0.46	0.720596643	10	100	7.21E-02	7.21E-03
Aluminum	7950	0	7950	12453.7898	109.7	1097	1.14E+02	1.14E+01
Chromium	15	0	15	23.49771661	0.1	1	2.35E+02	2.35E+01
Copper	27.6	0	27.6	43.23579857	0.235	2.35	1.84E+02	1.84E+01
Cyanide	0.26	0	0.26	0.407293755	4.5	45	9.05E-02	9.05E-03
Iron	12300	0	12300	19268.12762	100	1000	1.93E+02	1.93E+01
Lead	19.4	0	19.4	30.39038015	0.3	3	1.01E+02	1.01E+01
Mercury	0.19	0	0.19	0.297637744	0.01	0.1	2.98E+01	2.98E+00
Nickel	6.2	0	6.2	9.712389533	0	0	NA	NA
Vanadium	19	0	19	29.76377438	11.38	113.8	2.62E+00	2.62E-01
Zinc	39.9	0	39.9	62.50392619	13.9	139	4.50E+00	4.50E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

American Robin
(Less Conservative Inputs)

Body Weight	0.0810200 kg
Food Ingestion Rate	0.0976300 kg/day
Water Ingestion Rate	0.0113400 L/day
Soil Ingestion Rate	0.0292890 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.1812	0	0.1812	0.283852417	10	100	2.84E-02	2.84E-03
Benzo(a)pyrene	0.1911	0	0.1911	0.29936091	10	100	2.99E-02	2.99E-03
Benzo(b)fluoranthene	0.17315	0	0.17315	0.271241975	10	100	2.71E-02	2.71E-03
Benzo(k)fluoranthene	0.1759	0	0.1759	0.27554989	10	100	2.76E-02	2.76E-03
Bis(2-ethylhexyl)phthalate	0.2237	0	0.2237	0.35042928	1.11	11.1	3.16E-01	3.16E-02
Carbazole	0.19465	0	0.19465	0.304922036	10	100	3.05E-02	3.05E-03
Chrysene	0.16985	0	0.16985	0.266072478	10	100	2.66E-02	2.66E-03
Dibenzofuran	0.2019	0	0.2019	0.316279266	0	0	NA	NA
Fluoranthene	0.19525	0	0.19525	0.305861945	10	100	3.06E-02	3.06E-03
Indeno(1,2,3-cd)pyrene	0.18995	0	0.18995	0.297559418	10	100	2.98E-02	2.98E-03
Phenanthrene	0.2283	0	0.2283	0.357635247	10	100	3.58E-02	3.58E-03
Pyrene	0.18695	0	0.18695	0.292859875	10	100	2.93E-02	2.93E-03
Aluminum	4559	0	4559	7141.739336	109.7	1097	6.51E+01	6.51E+00
Chromium	6.46	0	6.46	10.11968329	0.1	1	1.01E+02	1.01E+01
Copper	4.09	0	4.09	6.407044063	0.235	2.35	2.73E+01	2.73E+00
Cyanide	0.11	0	0.11	0.172316588	4.5	45	3.83E-02	3.83E-03
Iron	5411	0	5411	8476.40964	100	1000	8.48E+01	8.48E+00
Lead	9.15	0	9.15	14.33360713	0.3	3	4.78E+01	4.78E+00
Mercury	0.08	0	0.08	0.125321155	0.01	0.1	1.25E+01	1.25E+00
Nickel	3.1	0	3.1	4.856194767	0	0	NA	NA
Vanadium	11.93	0	11.93	18.68851728	11.38	113.8	1.64E+00	1.64E-01
Zinc	15.3	0	15.3	23.96767095	13.9	139	1.72E+00	1.72E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Marsh Wren
(Conservative Inputs)

Body Weight	0.0103800	kg
Food Ingestion Rate	0.0090652	kg/day
Water Ingestion Rate	0.0028026	L/day
Soil Ingestion Rate	0.0009428	kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.26	0	0.26	0.25068161	10	100	2.51E-02	2.51E-03
Benzo(a)pyrene	0.2	0	0.2	0.192832	10	100	1.93E-02	1.93E-03
Benzo(b)fluoranthene	0.29	0	0.29	0.27960641	10	100	2.80E-02	2.80E-03
Benzo(k)fluoranthene	0.14	0	0.14	0.1349824	10	100	1.35E-02	1.35E-03
Bis(2-ethylhexyl)phthalat	1.3	0	1.3	1.25340803	1.11	11.1	1.13E+00	1.13E-01
Carbazole	0.065	0	0.065	0.0626704	10	100	6.27E-03	6.27E-04
Chrysene	0.3	0	0.3	0.28924801	10	100	2.89E-02	2.89E-03
Dibenzofuran	0.043	0	0.043	0.04145888	0	0	NA	NA
Fluoranthene	0.55	0	0.55	0.53028801	10	100	5.30E-02	5.30E-03
Indeno(1,2,3-cd)pyrene	0.11	0	0.11	0.1060576	10	100	1.06E-02	1.06E-03
Phenanthrene	0.64	0	0.64	0.61706241	10	100	6.17E-02	6.17E-03
Pyrene	0.46	0	0.46	0.44351361	10	100	4.44E-02	4.44E-03
Aluminum	7950	0	7950	7665.07215	109.7	1097	6.99E+01	6.99E+00
Chromium	15	0	15	14.4624003	0.1	1	1.45E+02	1.45E+01
Copper	27.6	0	27.6	26.6108165	0.235	2.35	1.13E+02	1.13E+01
Cyanide	0.26	0	0.26	0.25068161	4.5	45	5.57E-02	5.57E-03
Iron	12300	0	12300	11859.1682	100	1000	1.19E+02	1.19E+01
Lead	19.4	0	19.4	18.7047044	0.3	3	6.23E+01	6.23E+00
Mercury	0.19	0	0.19	0.1831904	0.01	0.1	1.83E+01	1.83E+00
Nickel	6.2	0	6.2	5.97779212	0	0	NA	NA
Vanadium	19	0	19	18.3190404	11.38	113.8	1.61E+00	1.61E-01
Zinc	39.9	0	39.9	38.4699848	13.9	139	2.77E+00	2.77E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Marsh Wren
(Conservative Inputs)

Body Weight	0.0103800	kg
Food Ingestion Rate	0.0090652	kg/day
Water Ingestion Rate	0.0028026	L/day
Soil Ingestion Rate	0.0009428	kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.1812	0	0.1812	0.1747058	10	100	1.75E-02	1.75E-03
Benzo(a)pyrene	0.1911	0	0.1911	0.18425098	10	100	1.84E-02	1.84E-03
Benzo(b)fluoranthene	0.17315	0	0.17315	0.16694431	10	100	1.67E-02	1.67E-03
Benzo(k)fluoranthene	0.1759	0	0.1759	0.16959575	10	100	1.70E-02	1.70E-03
Bis(2-ethylhexyl)phthalate	0.2237	0	0.2237	0.2156826	1.11	11.1	1.94E-01	1.94E-02
Carbazole	0.19465	0	0.19465	0.18767375	10	100	1.88E-02	1.88E-03
Chrysene	0.16985	0	0.16985	0.16376258	10	100	1.64E-02	1.64E-03
Dibenzofuran	0.2019	0	0.2019	0.19466391	0	0	NA	NA
Fluoranthene	0.19525	0	0.19525	0.18825224	10	100	1.88E-02	1.88E-03
Indeno(1,2,3-cd)pyrene	0.18995	0	0.18995	0.1831422	10	100	1.83E-02	1.83E-03
Phenanthrene	0.2283	0	0.2283	0.22011773	10	100	2.20E-02	2.20E-03
Pyrene	0.18695	0	0.18695	0.18024972	10	100	1.80E-02	1.80E-03
Aluminum	4559	0	4559	4395.60553	109.7	1097	4.01E+01	4.01E+00
Chromium	6.46	0	6.46	6.22847372	0.1	1	6.23E+01	6.23E+00
Copper	4.09	0	4.09	3.94341448	0.235	2.35	1.68E+01	1.68E+00
Cyanide	0.11	0	0.11	0.1060576	4.5	45	2.36E-02	2.36E-03
Iron	5411	0	5411	5217.06986	100	1000	5.22E+01	5.22E+00
Lead	9.15	0	9.15	8.82206418	0.3	3	2.94E+01	2.94E+00
Mercury	0.08	0	0.08	0.0771328	0.01	0.1	7.71E+00	7.71E-01
Nickel	3.1	0	3.1	2.98889606	0	0	NA	NA
Vanadium	11.93	0	11.93	11.502429	11.38	113.8	1.01E+00	1.01E-01
Zinc	15.3	0	15.3	14.7516483	13.9	139	1.06E+00	1.06E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Marsh Wren
(Less Conservative Inputs)

Body Weight	0.0161000	kg
Food Ingestion Rate	0.0036000	kg/day
Water Ingestion Rate	0.0040000	L/day
Soil Ingestion Rate	0.0009428	kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.26	0	0.26	0.07336168	10	100	7.34E-03	7.34E-04
Benzo(a)pyrene	0.2	0	0.2	0.05643206	10	100	5.64E-03	5.64E-04
Benzo(b)fluoranthene	0.29	0	0.29	0.08182649	10	100	8.18E-03	8.18E-04
Benzo(k)fluoranthene	0.14	0	0.14	0.03950244	10	100	3.95E-03	3.95E-04
Bis(2-ethylhexyl)phthalate	1.3	0	1.3	0.3668084	1.11	11.1	3.30E-01	3.30E-02
Carbazole	0.065	0	0.065	0.01834042	10	100	1.83E-03	1.83E-04
Chrysene	0.3	0	0.3	0.08464809	10	100	8.46E-03	8.46E-04
Dibenzofuran	0.043	0	0.043	0.01213289	0	0	NA	NA
Fluoranthene	0.55	0	0.55	0.15518817	10	100	1.55E-02	1.55E-03
Indeno(1,2,3-cd)pyrene	0.11	0	0.11	0.03103763	10	100	3.10E-03	3.10E-04
Phenanthrene	0.64	0	0.64	0.1805826	10	100	1.81E-02	1.81E-03
Pyrene	0.46	0	0.46	0.12979374	10	100	1.30E-02	1.30E-03
Aluminum	7950	0	7950	2243.17447	109.7	1097	2.04E+01	2.04E+00
Chromium	15	0	15	4.23240466	0.1	1	4.23E+01	4.23E+00
Copper	27.6	0	27.6	7.78762457	0.235	2.35	3.31E+01	3.31E+00
Cyanide	0.26	0	0.26	0.07336168	4.5	45	1.63E-02	1.63E-03
Iron	12300	0	12300	3470.57182	100	1000	3.47E+01	3.47E+00
Lead	19.4	0	19.4	5.47391002	0.3	3	1.82E+01	1.82E+00
Mercury	0.19	0	0.19	0.05361046	0.01	0.1	5.36E+00	5.36E-01
Nickel	6.2	0	6.2	1.74939393	0	0	NA	NA
Vanadium	19	0	19	5.3610459	11.38	113.8	4.71E-01	4.71E-02
Zinc	39.9	0	39.9	11.2581964	13.9	139	8.10E-01	8.10E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Marsh Wren
(Less Conservative Inputs)

Body Weight	0.0161000 kg
Food Ingestion Rate	0.0036000 kg/day
Water Ingestion Rate	0.0040000 L/day
Soil Ingestion Rate	0.0009428 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.1812	0	0.1812	0.05112745	10	100	5.11E-03	5.11E-04
Benzo(a)pyrene	0.1911	0	0.1911	0.05392084	10	100	5.39E-03	5.39E-04
Benzo(b)fluoranthene	0.17315	0	0.17315	0.04885606	10	100	4.89E-03	4.89E-04
Benzo(k)fluoranthene	0.1759	0	0.1759	0.049632	10	100	4.96E-03	4.96E-04
Bis(2-ethylhexyl)phthalate	0.2237	0	0.2237	0.06311926	1.11	11.1	5.69E-02	5.69E-03
Carbazole	0.19465	0	0.19465	0.0549225	10	100	5.49E-03	5.49E-04
Chrysene	0.16985	0	0.16985	0.04792493	10	100	4.79E-03	4.79E-04
Dibenzofuran	0.2019	0	0.2019	0.05696817	0	0	NA	NA
Fluoranthene	0.19525	0	0.19525	0.0550918	10	100	5.51E-03	5.51E-04
Indeno(1,2,3-cd)pyrene	0.18995	0	0.18995	0.05359635	10	100	5.36E-03	5.36E-04
Phenanthrene	0.2283	0	0.2283	0.0644172	10	100	6.44E-03	6.44E-04
Pyrene	0.18695	0	0.18695	0.05274987	10	100	5.27E-03	5.27E-04
Aluminum	4559	0	4559	1286.36886	109.7	1097	1.17E+01	1.17E+00
Chromium	6.46	0	6.46	1.82275561	0.1	1	1.82E+01	1.82E+00
Copper	4.09	0	4.09	1.15403567	0.235	2.35	4.91E+00	4.91E-01
Cyanide	0.11	0	0.11	0.03103763	4.5	45	6.90E-03	6.90E-04
Iron	5411	0	5411	1526.76944	100	1000	1.53E+01	1.53E+00
Lead	9.15	0	9.15	2.58176684	0.3	3	8.61E+00	8.61E-01
Mercury	0.08	0	0.08	0.02257282	0.01	0.1	2.26E+00	2.26E-01
Nickel	3.1	0	3.1	0.87469696	0	0	NA	NA
Vanadium	11.93	0	11.93	3.3661725	11.38	113.8	2.96E-01	2.96E-02
Zinc	15.3	0	15.3	4.31705275	13.9	139	3.11E-01	3.11E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Red Fox
(Conservative Inputs)

Body Weight	4.5300000	kg
Food Ingestion Rate	0.5895500	kg/day
Water Ingestion Rate	0.3854750	L/day
Soil Ingestion Rate	0.0165074	kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.26	0	0.26	0.034784751	1.3	2.6	2.68E-02	1.34E-02
Benzo(a)pyrene	0.2	0	0.2	0.026757501	1.3	2.6	2.06E-02	1.03E-02
Benzo(b)fluoranthene	0.29	0	0.29	0.038798377	1.3	2.6	2.98E-02	1.49E-02
Benzo(k)fluoranthene	0.14	0	0.14	0.018730251	1.3	2.6	1.44E-02	7.20E-03
Bis(2-ethylhexyl)phthalate	1.3	0	1.3	0.173923757	0.1833	1.833	9.49E-01	9.49E-02
Carbazole	0.065	0	0.065	0.008696188	1.3	2.6	6.69E-03	3.34E-03
Chrysene	0.3	0	0.3	0.040136252	1.3	2.6	3.09E-02	1.54E-02
Dibenzofuran	0.043	0	0.043	0.005752863	0	0	NA	NA
Fluoranthene	0.55	0	0.55	0.073583128	1.3	2.6	5.66E-02	2.83E-02
Indeno(1,2,3-cd)pyrene	0.11	0	0.11	0.014716626	1.3	2.6	1.13E-02	5.66E-03
Phenanthrene	0.64	0	0.64	0.085624004	1.3	2.6	6.59E-02	3.29E-02
Pyrene	0.46	0	0.46	0.061542253	1.3	2.6	4.73E-02	2.37E-02
Aluminum	7950	0	7950	1063.610669	1.93	19.3	5.51E+02	5.51E+01
Chromium	15	0	15	2.006812583	0.025	0.25	8.03E+01	8.03E+00
Copper	27.6	0	27.6	3.692535152	1	10	3.69E+00	3.69E-01
Cyanide	0.26	0	0.26	0.034784751	0.8	8	4.35E-02	4.35E-03
Iron	12300	0	12300	1645.586318	50	500	3.29E+01	3.29E+00
Lead	19.4	0	19.4	2.595477607	0.15	1.5	1.73E+01	1.73E+00
Mercury	0.19	0	0.19	0.025419626	0.01	0.5	2.54E+00	5.08E-02
Nickel	6.2	0	6.2	0.829482534	62.5	625	1.33E-02	1.33E-03
Vanadium	19	0	19	2.541962605	0.2	2	1.27E+01	1.27E+00
Zinc	39.9	0	39.9	5.33812147	25	250	2.14E-01	2.14E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Red Fox
(Conservative Inputs)

Body Weight	4.5300000	kg
Food Ingestion Rate	0.5895500	kg/day
Water Ingestion Rate	0.3854750	L/day
Soil Ingestion Rate	0.0165074	kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.1812	0	0.1812	0.0242423	1.3	2.6	1.86E-02	9.32E-03
Benzo(a)pyrene	0.1911	0	0.1911	0.02556679	1.3	2.6	1.97E-02	9.83E-03
Benzo(b)fluoranthene	0.17315	0	0.17315	0.02316531	1.3	2.6	1.78E-02	8.91E-03
Benzo(k)fluoranthene	0.1759	0	0.1759	0.02353322	1.3	2.6	1.81E-02	9.05E-03
Bis(2-ethylhexyl)phthalate	0.2237	0	0.2237	0.02992826	0.1833	1.833	1.63E-01	1.63E-02
Carbazole	0.19465	0	0.19465	0.02604174	1.3	2.6	2.00E-02	1.00E-02
Chrysene	0.16985	0	0.16985	0.02272381	1.3	2.6	1.75E-02	8.74E-03
Dibenzofuran	0.2019	0	0.2019	0.0270117	0	0	NA	NA
Fluoranthene	0.19525	0	0.19525	0.02612201	1.3	2.6	2.01E-02	1.00E-02
Indeno(1,2,3-cd)pyrene	0.18995	0	0.18995	0.02541294	1.3	2.6	1.95E-02	9.77E-03
Phenanthrene	0.2283	0	0.2283	0.03054369	1.3	2.6	2.35E-02	1.17E-02
Pyrene	0.18695	0	0.18695	0.02501157	1.3	2.6	1.92E-02	9.62E-03
Aluminum	4559	0	4559	609.937238	1.93	19.3	3.16E+02	3.16E+01
Chromium	6.46	0	6.46	0.86426729	0.025	0.25	3.46E+01	3.46E+00
Copper	4.09	0	4.09	0.5471909	1	10	5.47E-01	5.47E-02
Cyanide	0.11	0	0.11	0.01471663	0.8	8	1.84E-02	1.84E-03
Iron	5411	0	5411	723.924192	50	500	1.45E+01	1.45E+00
Lead	9.15	0	9.15	1.22415568	0.15	1.5	8.16E+00	8.16E-01
Mercury	0.08	0	0.08	0.010703	0.01	0.5	1.07E+00	2.14E-02
Nickel	3.1	0	3.1	0.41474127	62.5	625	6.64E-03	6.64E-04
Vanadium	11.93	0	11.93	1.59608494	0.2	2	7.98E+00	7.98E-01
Zinc	15.3	0	15.3	2.04694883	25	250	8.19E-02	8.19E-03

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17
Naval Weapons Station Yorktown
Yorktown, Virginia

Red Fox
(Less Conservative Inputs)

Body Weight	5.0000000	kg
Food Ingestion Rate	0.3200000	kg/day
Water Ingestion Rate	0.2752000	L/day
Soil Ingestion Rate	0.0090000	kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.26	0	0.26	0.017108	1.3	2.6	1.32E-02	6.58E-03
Benzo(a)pyrene	0.2	0	0.2	0.01316	1.3	2.6	1.01E-02	5.06E-03
Benzo(b)fluoranthene	0.29	0	0.29	0.019082	1.3	2.6	1.47E-02	7.34E-03
Benzo(k)fluoranthene	0.14	0	0.14	0.009212	1.3	2.6	7.09E-03	3.54E-03
Bis(2-ethylhexyl)phthalate	1.3	0	1.3	0.08554	0.1833	1.833	4.67E-01	4.67E-02
Carbazole	0.065	0	0.065	0.004277	1.3	2.6	3.29E-03	1.65E-03
Chrysene	0.3	0	0.3	0.01974	1.3	2.6	1.52E-02	7.59E-03
Dibenzofuran	0.043	0	0.043	0.0028294	0	0	NA	NA
Fluoranthene	0.55	0	0.55	0.03619	1.3	2.6	2.78E-02	1.39E-02
Indeno(1,2,3-cd)pyrene	0.11	0	0.11	0.007238	1.3	2.6	5.57E-03	2.78E-03
Phenanthrene	0.64	0	0.64	0.042112	1.3	2.6	3.24E-02	1.62E-02
Pyrene	0.46	0	0.46	0.030268	1.3	2.6	2.33E-02	1.16E-02
Aluminum	7950	0	7950	523.11	1.93	19.3	2.71E+02	2.71E+01
Chromium	15	0	15	0.987	0.025	0.25	3.95E+01	3.95E+00
Copper	27.6	0	27.6	1.81608	1	10	1.82E+00	1.82E-01
Cyanide	0.26	0	0.26	0.017108	0.8	8	2.14E-02	2.14E-03
Iron	12300	0	12300	809.34	50	500	1.62E+01	1.62E+00
Lead	19.4	0	19.4	1.27652	0.15	1.5	8.51E+00	8.51E-01
Mercury	0.19	0	0.19	0.012502	0.01	0.5	1.25E+00	2.50E-02
Nickel	6.2	0	6.2	0.40796	62.5	625	6.53E-03	6.53E-04
Vanadium	19	0	19	1.2502	0.2	2	6.25E+00	6.25E-01
Zinc	39.9	0	39.9	2.62542	25	250	1.05E-01	1.05E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Red Fox
(Less Conservative Inputs)

Body Weight	5.0000000 kg
Food Ingestion Rate	0.3200000 kg/day
Water Ingestion Rate	0.2752000 L/day
Soil Ingestion Rate	0.0090000 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.1812	0	0.1812	0.01192296	1.3	2.6	9.17E-03	4.59E-03
Benzo(a)pyrene	0.1911	0	0.1911	0.01257438	1.3	2.6	9.67E-03	4.84E-03
Benzo(b)fluoranthene	0.17315	0	0.17315	0.01139327	1.3	2.6	8.76E-03	4.38E-03
Benzo(k)fluoranthene	0.1759	0	0.1759	0.01157422	1.3	2.6	8.90E-03	4.45E-03
Bis(2-ethylhexyl)phthalate	0.2237	0	0.2237	0.01471946	0.1833	1.833	8.03E-02	8.03E-03
Carbazole	0.19465	0	0.19465	0.01280797	1.3	2.6	9.85E-03	4.93E-03
Chrysene	0.16985	0	0.16985	0.01117613	1.3	2.6	8.60E-03	4.30E-03
Dibenzofuran	0.2019	0	0.2019	0.01328502	0	0	NA	NA
Fluoranthene	0.19525	0	0.19525	0.01284745	1.3	2.6	9.88E-03	4.94E-03
Indeno(1,2,3-cd)pyrene	0.18995	0	0.18995	0.01249871	1.3	2.6	9.61E-03	4.81E-03
Phenanthrene	0.2283	0	0.2283	0.01502214	1.3	2.6	1.16E-02	5.78E-03
Pyrene	0.18695	0	0.18695	0.01230131	1.3	2.6	9.46E-03	4.73E-03
Aluminum	4559	0	4559	299.9822	1.93	19.3	1.55E+02	1.55E+01
Chromium	6.46	0	6.46	0.425068	0.025	0.25	1.70E+01	1.70E+00
Copper	4.09	0	4.09	0.269122	1	10	2.69E-01	2.69E-02
Cyanide	0.11	0	0.11	0.007238	0.8	8	9.05E-03	9.05E-04
Iron	5411	0	5411	356.0438	50	500	7.12E+00	7.12E-01
Lead	9.15	0	9.15	0.60207	0.15	1.5	4.01E+00	4.01E-01
Mercury	0.08	0	0.08	0.005264	0.01	0.5	5.26E-01	1.05E-02
Nickel	3.1	0	3.1	0.20398	62.5	625	3.26E-03	3.26E-04
Vanadium	11.93	0	11.93	0.784994	0.2	2	3.92E+00	3.92E-01
Zinc	15.3	0	15.3	1.00674	25	250	4.03E-02	4.03E-03

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Short-Tailed Shrew
(Conservative Inputs)

Body Weight	0.0150000 kg
Food Ingestion Rate	0.0093000 kg/day
Water Ingestion Rate	0.0033450 L/day
Soil Ingestion Rate	0.0009672 kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.26	0	0.26	0.1779648	1.3	2.6	1.37E-01	6.84E-02
Benzo(a)pyrene	0.2	0	0.2	0.136896	1.3	2.6	1.05E-01	5.27E-02
Benzo(b)fluoranthene	0.29	0	0.29	0.1984992	1.3	2.6	1.53E-01	7.63E-02
Benzo(k)fluoranthene	0.14	0	0.14	0.0958272	1.3	2.6	7.37E-02	3.69E-02
Bis(2-ethylhexyl)phthalate	1.3	0	1.3	0.889824	0.1833	1.833	4.85E+00	4.85E-01
Carbazole	0.065	0	0.065	0.0444912	1.3	2.6	3.42E-02	1.71E-02
Chrysene	0.3	0	0.3	0.205344	1.3	2.6	1.58E-01	7.90E-02
Dibenzofuran	0.043	0	0.043	0.02943264	0	0	NA	NA
Fluoranthene	0.55	0	0.55	0.376464	1.3	2.6	2.90E-01	1.45E-01
Indeno(1,2,3-cd)pyrene	0.11	0	0.11	0.0752928	1.3	2.6	5.79E-02	2.90E-02
Phenanthrene	0.64	0	0.64	0.4380672	1.3	2.6	3.37E-01	1.68E-01
Pyrene	0.46	0	0.46	0.3148608	1.3	2.6	2.42E-01	1.21E-01
Aluminum	7950	0	7950	5441.616	1.93	19.3	2.82E+03	2.82E+02
Chromium	15	0	15	10.2672	0.025	0.25	4.11E+02	4.11E+01
Copper	27.6	0	27.6	18.891648	1	10	1.89E+01	1.89E+00
Cyanide	0.26	0	0.26	0.1779648	0.8	8	2.22E-01	2.22E-02
Iron	12300	0	12300	8419.104	50	500	1.68E+02	1.68E+01
Lead	19.4	0	19.4	13.278912	0.15	1.5	8.85E+01	8.85E+00
Mercury	0.19	0	0.19	0.1300512	0.05	0.5	2.60E+00	2.60E-01
Nickel	6.2	0	6.2	4.243776	62.5	625	6.79E-02	6.79E-03
Vanadium	19	0	19	13.00512	0.2	2	6.50E+01	6.50E+00
Zinc	39.9	0	39.9	27.310752	25	250	1.09E+00	1.09E-01

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Short-Tailed Shrew
(Conservative Inputs)

Body Weight	0.0150000 kg
Food Ingestion Rate	0.0093000 kg/day
Water Ingestion Rate	0.0033450 L/day
Soil Ingestion Rate	0.0009672 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.1812	0	0.1812	0.124027776	1.3	2.6	9.54E-02	4.77E-02
Benzo(a)pyrene	0.1911	0	0.1911	0.130804128	1.3	2.6	1.01E-01	5.03E-02
Benzo(b)fluoranthene	0.17315	0	0.17315	0.118517712	1.3	2.6	9.12E-02	4.56E-02
Benzo(k)fluoranthene	0.1759	0	0.1759	0.120400032	1.3	2.6	9.26E-02	4.63E-02
Bis(2-ethylhexyl)phthalate	0.2237	0	0.2237	0.153118176	0.1833	1.833	8.35E-01	8.35E-02
Carbazole	0.19465	0	0.19465	0.133234032	1.3	2.6	1.02E-01	5.12E-02
Chrysene	0.16985	0	0.16985	0.116258928	1.3	2.6	8.94E-02	4.47E-02
Dibenzofuran	0.2019	0	0.2019	0.138196512	0	0	NA	NA
Fluoranthene	0.19525	0	0.19525	0.13364472	1.3	2.6	1.03E-01	5.14E-02
Indeno(1,2,3-cd)pyrene	0.18995	0	0.18995	0.130016976	1.3	2.6	1.00E-01	5.00E-02
Phenanthrene	0.2283	0	0.2283	0.156266784	1.3	2.6	1.20E-01	6.01E-02
Pyrene	0.18695	0	0.18695	0.127963536	1.3	2.6	9.84E-02	4.92E-02
Aluminum	4559	0	4559	3120.54432	1.93	19.3	1.62E+03	1.62E+02
Chromium	6.46	0	6.46	4.4217408	0.025	0.25	1.77E+02	1.77E+01
Copper	4.09	0	4.09	2.7995232	1	10	2.80E+00	2.80E-01
Cyanide	0.11	0	0.11	0.0752928	0.8	8	9.41E-02	9.41E-03
Iron	5411	0	5411	3703.72128	50	500	7.41E+01	7.41E+00
Lead	9.15	0	9.15	6.262992	0.15	1.5	4.18E+01	4.18E+00
Mercury	0.08	0	0.08	0.0547584	0.05	0.5	1.10E+00	1.10E-01
Nickel	3.1	0	3.1	2.121888	62.5	625	3.40E-02	3.40E-03
Vanadium	11.93	0	11.93	8.1658464	0.2	2	4.08E+01	4.08E+00
Zinc	15.3	0	15.3	10.472544	25	250	4.19E-01	4.19E-02

NA - Not Available
HQ_n. Hazard Quotient based on the NOAEL
HQ_l. Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Short-Tailed Shrew
(Less Conservative Inputs)

Body Weight	0.0167980	kg
Food Ingestion Rate	0.0093229	kg/day
Water Ingestion Rate	0.0037459	L/day
Soil Ingestion Rate	0.0009672	kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.26	0	0.26	0.159270354	1.3	2.6	1.23E-01	6.13E-02
Benzo(a)pyrene	0.2	0	0.2	0.122515657	1.3	2.6	9.42E-02	4.71E-02
Benzo(b)fluoranthene	0.29	0	0.29	0.177647702	1.3	2.6	1.37E-01	6.83E-02
Benzo(k)fluoranthene	0.14	0	0.14	0.08576096	1.3	2.6	6.60E-02	3.30E-02
Bis(2-ethylhexyl)phthalate	1.3	0	1.3	0.796351768	0.1833	1.833	4.34E+00	4.34E-01
Carbazole	0.065	0	0.065	0.039817588	1.3	2.6	3.06E-02	1.53E-02
Chrysene	0.3	0	0.3	0.183773485	1.3	2.6	1.41E-01	7.07E-02
Dibenzofuran	0.043	0	0.043	0.026340866	0	0	NA	NA
Fluoranthene	0.55	0	0.55	0.336918056	1.3	2.6	2.59E-01	1.30E-01
Indeno(1,2,3-cd)pyrene	0.11	0	0.11	0.067383611	1.3	2.6	5.18E-02	2.59E-02
Phenanthrene	0.64	0	0.64	0.392050101	1.3	2.6	3.02E-01	1.51E-01
Pyrene	0.46	0	0.46	0.28178601	1.3	2.6	2.17E-01	1.08E-01
Aluminum	7950	0	7950	4869.997351	1.93	19.3	2.52E+03	2.52E+02
Chromium	15	0	15	9.188674247	0.025	0.25	3.68E+02	3.68E+01
Copper	27.6	0	27.6	16.90716061	1	10	1.69E+01	1.69E+00
Cyanide	0.26	0	0.26	0.159270354	0.8	8	1.99E-01	1.99E-02
Iron	12300	0	12300	7534.712882	50	500	1.51E+02	1.51E+01
Lead	19.4	0	19.4	11.88401869	0.15	1.5	7.92E+01	7.92E+00
Mercury	0.19	0	0.19	0.116389874	0.05	0.5	2.33E+00	2.33E-01
Nickel	6.2	0	6.2	3.797985355	62.5	625	6.08E-02	6.08E-03
Vanadium	19	0	19	11.63898738	0.2	2	5.82E+01	5.82E+00
Zinc	39.9	0	39.9	24.4418735	25	250	9.78E-01	9.78E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown

Short-Tailed Shrew
(Less Conservative Inputs)

Body Weight	0.0167980	kg
Food Ingestion Rate	0.0093229	kg/day
Water Ingestion Rate	0.0037459	L/day
Soil Ingestion Rate	0.0009672	kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.1812	0	0.1812	0.110999185	1.3	2.6	8.54E-02	4.27E-02
Benzo(a)pyrene	0.1911	0	0.1911	0.11706371	1.3	2.6	9.00E-02	4.50E-02
Benzo(b)fluoranthene	0.17315	0	0.17315	0.10606793	1.3	2.6	8.16E-02	4.08E-02
Benzo(k)fluoranthene	0.1759	0	0.1759	0.10775252	1.3	2.6	8.29E-02	4.14E-02
Bis(2-ethylhexyl)phthalate	0.2237	0	0.2237	0.137033762	0.1833	1.833	7.48E-01	7.48E-02
Carbazole	0.19465	0	0.19465	0.119238363	1.3	2.6	9.17E-02	4.59E-02
Chrysene	0.16985	0	0.16985	0.104046421	1.3	2.6	8.00E-02	4.00E-02
Dibenzofuran	0.2019	0	0.2019	0.123679555	0	0	NA	NA
Fluoranthene	0.19525	0	0.19525	0.11960591	1.3	2.6	9.20E-02	4.60E-02
Indeno(1,2,3-cd)pyrene	0.18995	0	0.18995	0.116359245	1.3	2.6	8.95E-02	4.48E-02
Phenanthrene	0.2283	0	0.2283	0.139851622	1.3	2.6	1.08E-01	5.38E-02
Pyrene	0.18695	0	0.18695	0.11452151	1.3	2.6	8.81E-02	4.40E-02
Aluminum	4559	0	4559	2792.744393	1.93	19.3	1.45E+03	1.45E+02
Chromium	6.46	0	6.46	3.957255709	0.025	0.25	1.58E+02	1.58E+01
Copper	4.09	0	4.09	2.505445178	1	10	2.51E+00	2.51E-01
Cyanide	0.11	0	0.11	0.067383611	0.8	8	8.42E-02	8.42E-03
Iron	5411	0	5411	3314.66109	50	500	6.63E+01	6.63E+00
Lead	9.15	0	9.15	5.605091291	0.15	1.5	3.74E+01	3.74E+00
Mercury	0.08	0	0.08	0.049006263	0.05	0.5	9.80E-01	9.80E-02
Nickel	3.1	0	3.1	1.898992678	62.5	625	3.04E-02	3.04E-03
Vanadium	11.93	0	11.93	7.308058918	0.2	2	3.65E+01	3.65E+00
Zinc	15.3	0	15.3	9.372447732	25	250	3.75E-01	3.75E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Meadow Vole
(Conservative Inputs)

Body Weight	0.0170000	kg
Food Ingestion Rate	0.0059500	kg/day
Water Ingestion Rate	0.0035700	L/day
Soil Ingestion Rate	0.0001428	kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.26	0	0.26	0.093184	1.3	2.6	7.17E-02	3.58E-02
Benzo(a)pyrene	0.2	0	0.2	0.07168	1.3	2.6	5.51E-02	2.76E-02
Benzo(b)fluoranthene	0.29	0	0.29	0.103936	1.3	2.6	8.00E-02	4.00E-02
Benzo(k)fluoranthene	0.14	0	0.14	0.050176	1.3	2.6	3.86E-02	1.93E-02
Bis(2-ethylhexyl)phthalate	1.3	0	1.3	0.46592	0.1833	1.833	2.54E+00	2.54E-01
Carbazole	0.065	0	0.065	0.023296	1.3	2.6	1.79E-02	8.96E-03
Chrysene	0.3	0	0.3	0.10752	1.3	2.6	8.27E-02	4.14E-02
Dibenzofuran	0.043	0	0.043	0.0154112	0	0	NA	NA
Fluoranthene	0.55	0	0.55	0.19712	1.3	2.6	1.52E-01	7.58E-02
Indeno(1,2,3-cd)pyrene	0.11	0	0.11	0.039424	1.3	2.6	3.03E-02	1.52E-02
Phenanthrene	0.64	0	0.64	0.229376	1.3	2.6	1.76E-01	8.82E-02
Pyrene	0.46	0	0.46	0.164864	1.3	2.6	1.27E-01	6.34E-02
Aluminum	7950	0	7950	2849.28	1.93	19.3	1.48E+03	1.48E+02
Chromium	15	0	15	5.376	0.025	0.25	2.15E+02	2.15E+01
Copper	27.6	0	27.6	9.89184	1	10	9.89E+00	9.89E-01
Cyanide	0.26	0	0.26	0.093184	0.8	8	1.16E-01	1.16E-02
Iron	12300	0	12300	4408.32	50	500	8.82E+01	8.82E+00
Lead	19.4	0	19.4	6.95296	0.15	1.5	4.64E+01	4.64E+00
Mercury	0.19	0	0.19	0.068096	0.05	0.5	1.36E+00	1.36E-01
Nickel	6.2	0	6.2	2.22208	62.5	625	3.56E-02	3.56E-03
Vanadium	19	0	19	6.8096	0.2	2	3.40E+01	3.40E+00
Zinc	39.9	0	39.9	14.30016	25	250	5.72E-01	5.72E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Meadow Vole
(Conservative Inputs)

Body Weight	0.0170000	kg
Food Ingestion Rate	0.0059500	kg/day
Water Ingestion Rate	0.0035700	L/day
Soil Ingestion Rate	0.0001428	kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.1812	0	0.1812	0.065	1.3	2.6	5.00E-02	2.50E-02
Benzo(a)pyrene	0.1911	0	0.1911	0.068	1.3	2.6	5.27E-02	2.63E-02
Benzo(b)fluoranthene	0.17315	0	0.17315	0.062	1.3	2.6	4.77E-02	2.39E-02
Benzo(k)fluoranthene	0.1759	0	0.1759	0.063	1.3	2.6	4.85E-02	2.42E-02
Bis(2-ethylhexyl)phthalate	0.2237	0	0.2237	0.080	0.1833	1.833	4.37E-01	4.37E-02
Carbazole	0.19465	0	0.19465	0.070	1.3	2.6	5.37E-02	2.68E-02
Chrysene	0.16985	0	0.16985	0.061	1.3	2.6	4.68E-02	2.34E-02
Dibenzofuran	0.2019	0	0.2019	0.072	0	0	NA	NA
Fluoranthene	0.19525	0	0.19525	0.070	1.3	2.6	5.38E-02	2.69E-02
Indeno(1,2,3-cd)pyrene	0.18995	0	0.18995	0.068	1.3	2.6	5.24E-02	2.62E-02
Phenanthrene	0.2283	0	0.2283	0.082	1.3	2.6	6.29E-02	3.15E-02
Pyrene	0.18695	0	0.18695	0.067	1.3	2.6	5.15E-02	2.58E-02
Aluminum	4559	0	4559	1633.946	1.93	19.3	8.47E+02	8.47E+01
Chromium	6.46	0	6.46	2.315	0.025	0.25	9.26E+01	9.26E+00
Copper	4.09	0	4.09	1.466	1	10	1.47E+00	1.47E-01
Cyanide	0.11	0	0.11	0.039	0.8	8	4.93E-02	4.93E-03
Iron	5411	0	5411	1939.302	50	500	3.88E+01	3.88E+00
Lead	9.15	0	9.15	3.279	0.15	1.5	2.19E+01	2.19E+00
Mercury	0.08	0	0.08	0.029	0.05	0.5	5.73E-01	5.73E-02
Nickel	3.1	0	3.1	1.111	62.5	625	1.78E-02	1.78E-03
Vanadium	11.93	0	11.93	4.276	0.2	2	2.14E+01	2.14E+00
Zinc	15.3	0	15.3	5.484	25	250	2.19E-01	2.19E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Meadow Vole
(Less Conservative Inputs)

Body Weight	0.0328600	kg
Food Ingestion Rate	0.0106795	kg/day
Water Ingestion Rate	0.0057505	L/day
Soil Ingestion Rate	0.0002563	kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.26	0	0.26	0.086528	1.3	2.6	6.66E-02	3.33E-02
Benzo(a)pyrene	0.2	0	0.2	0.06656	1.3	2.6	5.12E-02	2.56E-02
Benzo(b)fluoranthene	0.29	0	0.29	0.096512	1.3	2.6	7.42E-02	3.71E-02
Benzo(k)fluoranthene	0.14	0	0.14	0.046592	1.3	2.6	3.58E-02	1.79E-02
Bis(2-ethylhexyl)phthalate	1.3	0	1.3	0.43264	0.1833	1.833	2.36E+00	2.36E-01
Carbazole	0.065	0	0.065	0.021632	1.3	2.6	1.66E-02	8.32E-03
Chrysene	0.3	0	0.3	0.09984	1.3	2.6	7.68E-02	3.84E-02
Dibenzofuran	0.043	0	0.043	0.0143104	0	0	NA	NA
Fluoranthene	0.55	0	0.55	0.18304	1.3	2.6	1.41E-01	7.04E-02
Indeno(1,2,3-cd)pyrene	0.11	0	0.11	0.036608	1.3	2.6	2.82E-02	1.41E-02
Phenanthrene	0.64	0	0.64	0.212992	1.3	2.6	1.64E-01	8.19E-02
Pyrene	0.46	0	0.46	0.153088	1.3	2.6	1.18E-01	5.89E-02
Aluminum	7950	0	7950	2645.76	1.93	19.3	1.37E+03	1.37E+02
Chromium	15	0	15	4.992	0.025	0.25	2.00E+02	2.00E+01
Copper	27.6	0	27.6	9.18528	1	10	9.19E+00	9.19E-01
Cyanide	0.26	0	0.26	0.086528	0.8	8	1.08E-01	1.08E-02
Iron	12300	0	12300	4093.44	50	500	8.19E+01	8.19E+00
Lead	19.4	0	19.4	6.45632	0.15	1.5	4.30E+01	4.30E+00
Mercury	0.19	0	0.19	0.063232	0.05	0.5	1.26E+00	1.26E-01
Nickel	6.2	0	6.2	2.06336	62.5	625	3.30E-02	3.30E-03
Vanadium	19	0	19	6.3232	0.2	2	3.16E+01	3.16E+00
Zinc	39.9	0	39.9	13.27872	25	250	5.31E-01	5.31E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Meadow Vole
(Less Conservative Inputs)

Body Weight	0.0328600	kg
Food Ingestion Rate	0.0106795	kg/day
Water Ingestion Rate	0.0057505	L/day
Soil Ingestion Rate	0.0002563	kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.1812	0	0.1812	0.060	1.3	2.6	4.64E-02	2.32E-02
Benzo(a)pyrene	0.1911	0	0.1911	0.064	1.3	2.6	4.89E-02	2.45E-02
Benzo(b)fluoranthene	0.17315	0	0.17315	0.058	1.3	2.6	4.43E-02	2.22E-02
Benzo(k)fluoranthene	0.1759	0	0.1759	0.059	1.3	2.6	4.50E-02	2.25E-02
Bis(2-ethylhexyl)phthalate	0.2237	0	0.2237	0.074	0.1833	1.833	4.06E-01	4.06E-02
Carbazole	0.19465	0	0.19465	0.065	1.3	2.6	4.98E-02	2.49E-02
Chrysene	0.16985	0	0.16985	0.057	1.3	2.6	4.35E-02	2.17E-02
Dibenzofuran	0.2019	0	0.2019	0.067	0	0	NA	NA
Fluoranthene	0.19525	0	0.19525	0.065	1.3	2.6	5.00E-02	2.50E-02
Indeno(1,2,3-cd)pyrene	0.18995	0	0.18995	0.063	1.3	2.6	4.86E-02	2.43E-02
Phenanthrene	0.2283	0	0.2283	0.076	1.3	2.6	5.84E-02	2.92E-02
Pyrene	0.18695	0	0.18695	0.062	1.3	2.6	4.79E-02	2.39E-02
Aluminum	4559	0	4559	1517.235	1.93	19.3	7.86E+02	7.86E+01
Chromium	6.46	0	6.46	2.150	0.025	0.25	8.60E+01	8.60E+00
Copper	4.09	0	4.09	1.361	1	10	1.36E+00	1.36E-01
Cyanide	0.11	0	0.11	0.037	0.8	8	4.58E-02	4.58E-03
Iron	5411	0	5411	1800.781	50	500	3.60E+01	3.60E+00
Lead	9.15	0	9.15	3.045	0.15	1.5	2.03E+01	2.03E+00
Mercury	0.08	0	0.08	0.027	0.05	0.5	5.32E-01	5.32E-02
Nickel	3.1	0	3.1	1.032	62.5	625	1.65E-02	1.65E-03
Vanadium	11.93	0	11.93	3.970	0.2	2	1.99E+01	1.99E+00
Zinc	15.3	0	15.3	5.092	25	250	2.04E-01	2.04E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Deer Mouse
(Conservative Inputs)

Body Weight	0.0150000	kg
Food Ingestion Rate	0.0028500	kg/day
Water Ingestion Rate	0.0019000	L/day
Soil Ingestion Rate	0.0000700	kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invetebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.26	0	0.104	0.156	0.05061333	1.3	2.6	3.89E-02	1.95E-02
Benzo(a)pyrene	0.2	0	0.08	0.12	0.03893333	1.3	2.6	2.99E-02	1.50E-02
Benzo(b)fluoranthene	0.29	0	0.116	0.174	0.05645333	1.3	2.6	4.34E-02	2.17E-02
Benzo(k)fluoranthene	0.14	0	0.056	0.084	0.02725333	1.3	2.6	2.10E-02	1.05E-02
Bis(2-ethylhexyl)phthalate	1.3	0	0.52	0.78	0.25306667	0.1833	1.833	1.38E+00	1.38E-01
Carbazole	0.065	0	0.026	0.039	0.01265333	1.3	2.6	9.73E-03	4.87E-03
Chrysene	0.3	0	0.12	0.18	0.0584	1.3	2.6	4.49E-02	2.25E-02
Dibenzofuran	0.043	0	0.0172	0.0258	0.00837067	0	0	NA	NA
Fluoranthene	0.55	0	0.22	0.33	0.10706667	1.3	2.6	8.24E-02	4.12E-02
Indeno(1,2,3-cd)pyrene	0.11	0	0.044	0.066	0.02141333	1.3	2.6	1.65E-02	8.24E-03
Phenanthrene	0.64	0	0.256	0.384	0.12458667	1.3	2.6	9.58E-02	4.79E-02
Pyrene	0.46	0	0.184	0.276	0.08954667	1.3	2.6	6.89E-02	3.44E-02
Aluminum	7950	0	3180	4770	1547.6	1.93	19.3	8.02E+02	8.02E+01
Chromium	15	0	6	9	2.92	0.025	0.25	1.17E+02	1.17E+01
Copper	27.6	0	11.04	16.56	5.3728	1	10	5.37E+00	5.37E-01
Cyanide	0.26	0	0.104	0.156	0.05061333	0.8	8	6.33E-02	6.33E-03
Iron	12300	0	4920	7380	2394.4	50	500	4.79E+01	4.79E+00
Lead	19.4	0	7.76	11.64	3.77653333	0.15	1.5	2.52E+01	2.52E+00
Mercury	0.19	0	0.076	0.114	0.03698667	0.05	0.5	7.40E-01	7.40E-02
Nickel	6.2	0	2.48	3.72	1.20693333	62.5	625	1.93E-02	1.93E-03
Vanadium	19	0	7.6	11.4	3.69866667	0.2	2	1.85E+01	1.85E+00
Zinc	39.9	0	15.96	23.94	7.7672	25	250	3.11E-01	3.11E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Deer Mouse
(Conservative Inputs)

Body Weight	0.0150000	kg
Food Ingestion Rate	0.0028500	kg/day
Water Ingestion Rate	0.0019000	L/day
Soil Ingestion Rate	0.0000700	kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertabrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.1812	0	0.07248	0.10872	0.0352736	1.3	2.6	2.71E-02	1.36E-02
Benzo(a)pyrene	0.1911	0	0.07644	0.11466	0.0372008	1.3	2.6	2.86E-02	1.43E-02
Benzo(b)fluoranthene	0.17315	0	0.06926	0.10389	0.03370653	1.3	2.6	2.59E-02	1.30E-02
Benzo(k)fluoranthene	0.1759	0	0.07036	0.10554	0.03424187	1.3	2.6	2.63E-02	1.32E-02
Bis(2-ethylhexyl)phthalate	0.2237	0	0.08948	0.13422	0.04354693	0.1833	1.833	2.38E-01	2.38E-02
Carbazole	0.19465	0	0.07786	0.11679	0.03789187	1.3	2.6	2.91E-02	1.46E-02
Chrysene	0.16985	0	0.06794	0.10191	0.03306413	1.3	2.6	2.54E-02	1.27E-02
Dibenzofuran	0.2019	0	0.08076	0.12114	0.0393032	0	0	NA	NA
Fluoranthene	0.19525	0	0.0781	0.11715	0.03800867	1.3	2.6	2.92E-02	1.46E-02
Indeno(1,2,3-cd)pyrene	0.18995	0	0.07598	0.11397	0.03697693	1.3	2.6	2.84E-02	1.42E-02
Phenanthrene	0.2283	0	0.09132	0.13698	0.0444424	1.3	2.6	3.42E-02	1.71E-02
Pyrene	0.18695	0	0.07478	0.11217	0.03639293	1.3	2.6	2.80E-02	1.40E-02
Aluminum	4559	0	1823.6	2735.4	887.485333	1.93	19.3	4.60E+02	4.60E+01
Chromium	6.46	0	2.584	3.876	1.25754667	0.025	0.25	5.03E+01	5.03E+00
Copper	4.09	0	1.636	2.454	0.79618667	1	10	7.96E-01	7.96E-02
Cyanide	0.11	0	0.044	0.066	0.02141333	0.8	8	2.68E-02	2.68E-03
Iron	5411	0	2164.4	3246.6	1053.34133	50	500	2.11E+01	2.11E+00
Lead	9.15	0	3.66	5.49	1.7812	0.15	1.5	1.19E+01	1.19E+00
Mercury	0.08	0	0.032	0.048	0.01557333	0.05	0.5	3.11E-01	3.11E-02
Nickel	3.1	0	1.24	1.86	0.60346667	62.5	625	9.66E-03	9.66E-04
Vanadium	11.93	0	4.772	7.158	2.32237333	0.2	2	1.16E+01	1.16E+00
Zinc	15.3	0	6.12	9.18	2.9784	25	250	1.19E-01	1.19E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Deer Mouse
(Less Conservative Inputs)

Body Weight	0.0193600	kg
Food Ingestion Rate	0.0037752	kg/day
Water Ingestion Rate	0.0036784	L/day
Soil Ingestion Rate	0.0000755	kg/day

Maximum Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invetebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.26	0	0.104	0.156	0.05171395	1.3	2.6	3.98E-02	1.99E-02
Benzo(a)pyrene	0.2	0	0.08	0.12	0.03977996	1.3	2.6	3.06E-02	1.53E-02
Benzo(b)fluoranthene	0.29	0	0.116	0.174	0.05768094	1.3	2.6	4.44E-02	2.22E-02
Benzo(k)fluoranthene	0.14	0	0.056	0.084	0.02784597	1.3	2.6	2.14E-02	1.07E-02
Bis(2-ethylhexyl)phthalate	1.3	0	0.52	0.78	0.25856973	0.1833	1.833	1.41E+00	1.41E-01
Carbazole	0.065	0	0.026	0.039	0.01292849	1.3	2.6	9.94E-03	4.97E-03
Chrysene	0.3	0	0.12	0.18	0.05966994	1.3	2.6	4.59E-02	2.29E-02
Dibenzofuran	0.043	0	0.0172	0.0258	0.00855269	0	0	NA	NA
Fluoranthene	0.55	0	0.22	0.33	0.10939489	1.3	2.6	8.41E-02	4.21E-02
Indeno(1,2,3-cd)pyrene	0.11	0	0.044	0.066	0.02187898	1.3	2.6	1.68E-02	8.41E-03
Phenanthrene	0.64	0	0.256	0.384	0.12729587	1.3	2.6	9.79E-02	4.90E-02
Pyrene	0.46	0	0.184	0.276	0.0914939	1.3	2.6	7.04E-02	3.52E-02
Aluminum	7950	0	3180	4770	1581.25336	1.93	19.3	8.19E+02	8.19E+01
Chromium	15	0	6	9	2.9834969	0.025	0.25	1.19E+02	1.19E+01
Copper	27.6	0	11.04	16.56	5.4896343	1	10	5.49E+00	5.49E-01
Cyanide	0.26	0	0.104	0.156	0.05171395	0.8	8	6.46E-02	6.46E-03
Iron	12300	0	4920	7380	2446.46746	50	500	4.89E+01	4.89E+00
Lead	19.4	0	7.76	11.64	3.85865599	0.15	1.5	2.57E+01	2.57E+00
Mercury	0.19	0	0.076	0.114	0.03779096	0.05	0.5	7.56E-01	7.56E-02
Nickel	6.2	0	2.48	3.72	1.23317872	62.5	625	1.97E-02	1.97E-03
Vanadium	19	0	7.6	11.4	3.77909607	0.2	2	1.89E+01	1.89E+00
Zinc	39.9	0	15.96	23.94	7.93610176	25	250	3.17E-01	3.17E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL

Site 17 Proper
Naval Weapons Station Yorktown
Yorktown, Virginia

Deer Mouse
(Less Conservative Inputs)

Body Weight	0.0193600 kg
Food Ingestion Rate	0.0037752 kg/day
Water Ingestion Rate	0.0036784 L/day
Soil Ingestion Rate	0.0000755 kg/day

Mean Concentrations

Ecological Contaminant of Concern	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertabrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzo(a)anthracene	0.1812	0	0.07248	0.10872	0.03604064	1.3	2.6	2.77E-02	1.39E-02
Benzo(a)pyrene	0.1911	0	0.07644	0.11466	0.03800975	1.3	2.6	2.92E-02	1.46E-02
Benzo(b)fluoranthene	0.17315	0	0.06926	0.10389	0.0344395	1.3	2.6	2.65E-02	1.32E-02
Benzo(k)fluoranthene	0.1759	0	0.07036	0.10554	0.03498647	1.3	2.6	2.69E-02	1.35E-02
Bis(2-ethylhexyl)phthalat	0.2237	0	0.08948	0.13422	0.04449388	0.1833	1.833	2.43E-01	2.43E-02
Carbazole	0.19465	0	0.07786	0.11679	0.03871584	1.3	2.6	2.98E-02	1.49E-02
Chrysene	0.16985	0	0.06794	0.10191	0.03378313	1.3	2.6	2.60E-02	1.30E-02
Dibenzofuran	0.2019	0	0.08076	0.12114	0.04015787	0	0	NA	NA
Fluoranthene	0.19525	0	0.0781	0.11715	0.03883518	1.3	2.6	2.99E-02	1.49E-02
Indeno(1,2,3-cd)pyrene	0.18995	0	0.07598	0.11397	0.03778102	1.3	2.6	2.91E-02	1.45E-02
Phenanthrene	0.2283	0	0.09132	0.13698	0.04540882	1.3	2.6	3.49E-02	1.75E-02
Pyrene	0.18695	0	0.07478	0.11217	0.03718432	1.3	2.6	2.86E-02	1.43E-02
Aluminum	4559	0	1823.6	2735.4	906.784158	1.93	19.3	4.70E+02	4.70E+01
Chromium	6.46	0	2.584	3.876	1.28489267	0.025	0.25	5.14E+01	5.14E+00
Copper	4.09	0	1.636	2.454	0.81350015	1	10	8.14E-01	8.14E-02
Cyanide	0.11	0	0.044	0.066	0.02187898	0.8	8	2.73E-02	2.73E-03
Iron	5411	0	2164.4	3246.6	1076.24678	50	500	2.15E+01	2.15E+00
Lead	9.15	0	3.66	5.49	1.81993311	0.15	1.5	1.21E+01	1.21E+00
Mercury	0.08	0	0.032	0.048	0.01591198	0.05	0.5	3.18E-01	3.18E-02
Nickel	3.1	0	1.24	1.86	0.61658936	62.5	625	9.87E-03	9.87E-04
Vanadium	11.93	0	4.772	7.158	2.37287454	0.2	2	1.19E+01	1.19E+00
Zinc	15.3	0	6.12	9.18	3.04316684	25	250	1.22E-01	1.22E-02

NA - Not Available
HQ_n - Hazard Quotient based on the NOAEL
HQ_l - Hazard Quotient based on the LOAEL