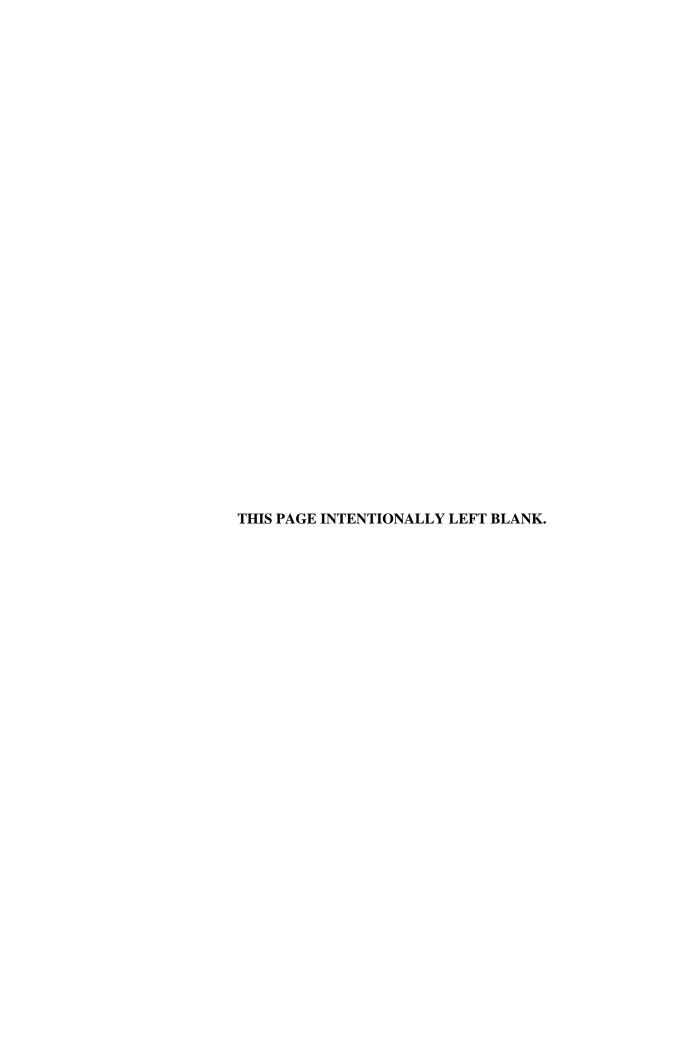
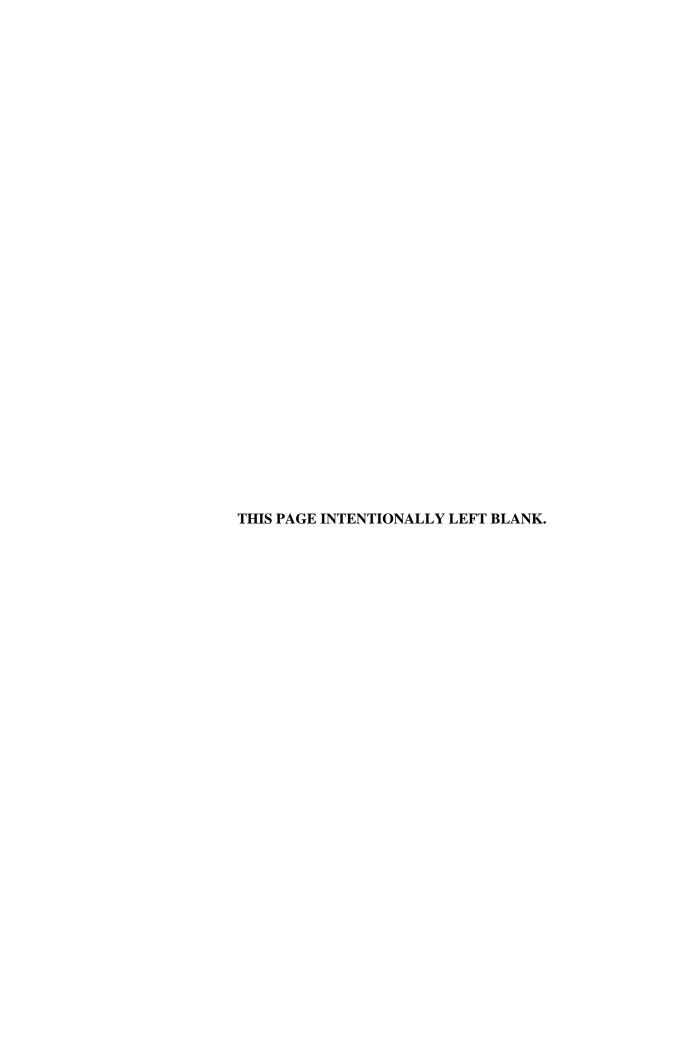
#### **APPENDIX A**

# Field Sampling Logs

Discrete Surface Soil Samples
Incremental Sampling Method Surface Soil Samples
Soil Boring Samples
Surface Water and Sediment Samples



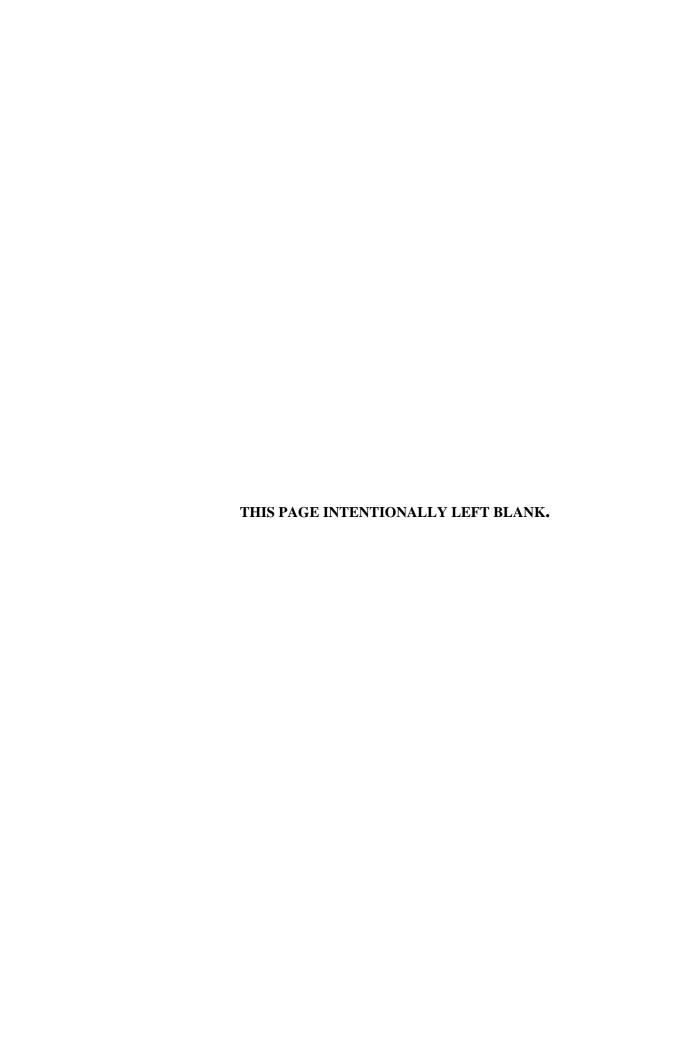




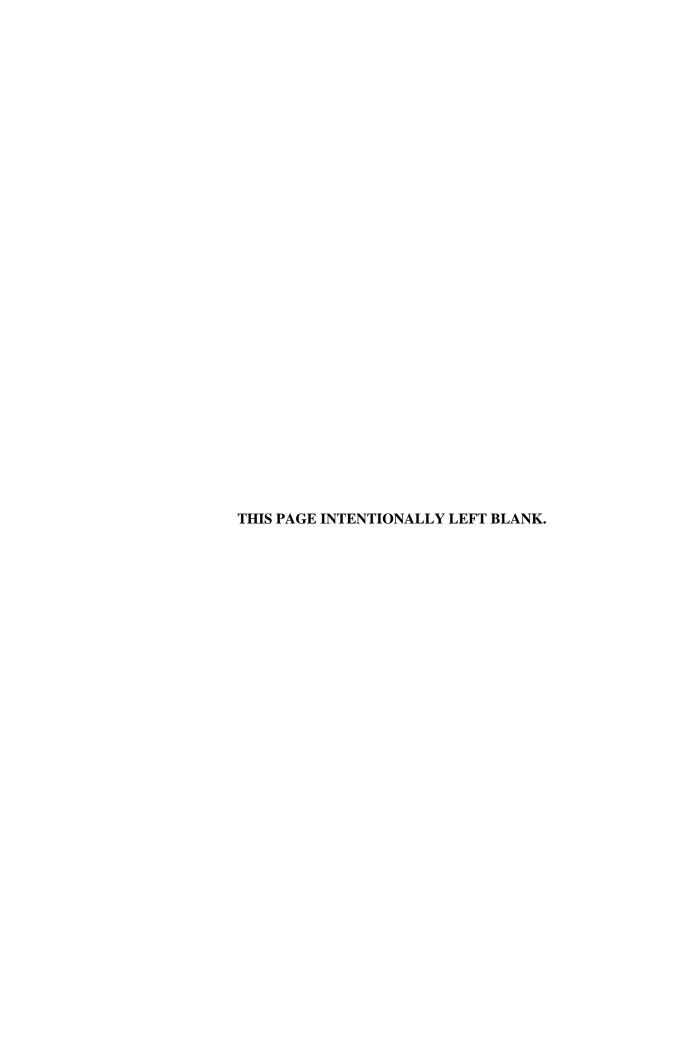
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## INCREMENTAL SAMPLING METHOD (ISM) (FORMERLY MULTI-INCREMENTAL) SURFACE SOIL SAMPLES



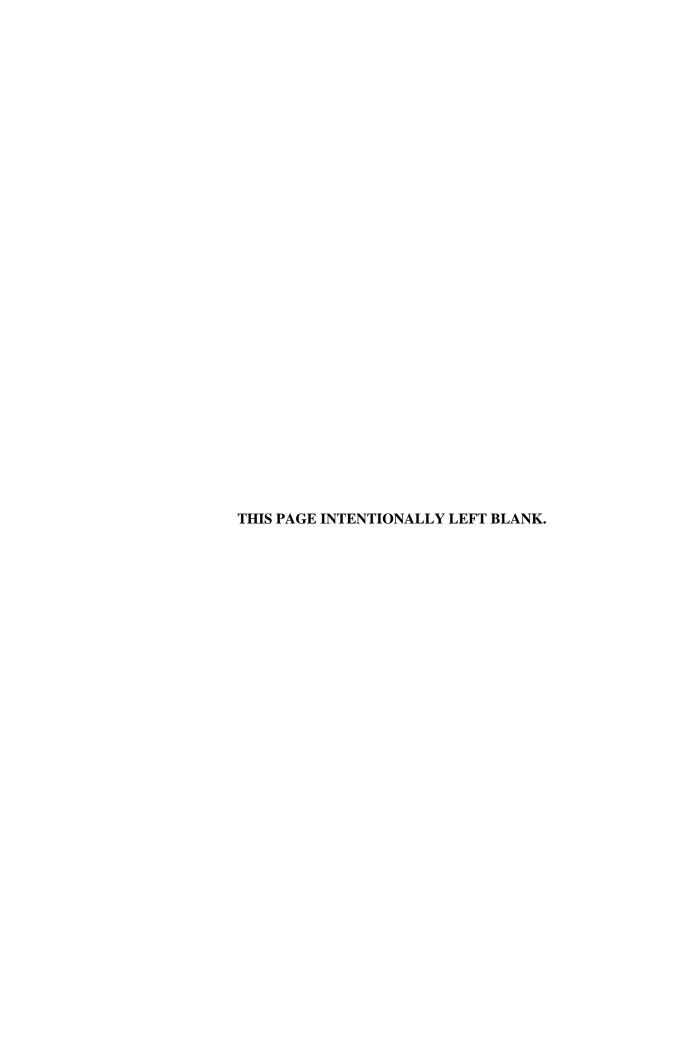
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QO'/ woold (O'/ open Area  Location Sketch/Comments (not to scale):  Woods  Woods  Woods  Woods  Woods  Woods	SM, JANO,	· mr 307	Trace CVa	y, lace	e graver, 4	I Jaung	SHITHING	
QO'/ woold (O'/ open Area  Location Sketch/Comments (not to scale):  Woods  Woods  Woods  Woods  Woods  Woods	olive prou	ימיל את	1 <sup>3</sup> /3, Sc	++, do	amp, oup	lasticity	HON HEAL	
Location Sketch/Comments (not to scale):    The standard of the scale	accumula	tion, sta	on 1 brown	1 75 Y	R 5/8, trace	organics (	(cools)	
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MI Soil	Analyses:	CAPLOSIVES	Cs. SVOCs. M	⊾S ∐ SVC etals, Explos	OUS PAHS	OTHER VOS		
Analyses: EXPLOSIVES P TAL METALS SVOCs PAHs TOTHER VOCS  FULL SUITE (VOCs SVOCs Metals Explosives Propellants Posticides PCPs)	A		- 30, 01003, 141					
MI Soil Analyses: EXPLOSIVES TAL METALS SVOCs PAHs TOTHER VOCS FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)  corded By: State and Date QC Checked By: State and Date)					_			





HTRW DRILLING LOG	USACE - Louisville	E	OREHOLE NUMBER  ATTICITIES  WEASS-0Z
1. COMPANY NAME SAIC	2. DRILLING SUBCONTRACTO Frontz Drilling	OR .	SHEET 1 OF 2
3. PROJECT RUAAP PBA 08 RI	4. LOCATION	RVAAP 8451 State Route 5	Ravenna, OH 44266
NAME OF DRILLER JORDMY FULPIONE 7. SIZES AND TYPES OF SAMPLING EQUIPMENT	6. MAKE/MODEL	dechione (f	62% DT
SIZES AND TYPES OF SAMPLING EQUIPMENT	8. BOREHOLE LC		357472.23'E
3" XI HAND HUGER	9. SURFACE ELE		NAD 83
3" X1' HAND AUGER 15" X4' ACETATE UNE	10. DRILL DATE 03/23 15. DEPTH GROU	INDE STARTED: 1035 O	COMPLETED: 1140
2" XY DUAL TUBE	16. DEPTH TO W	ATER/ELAPSED TIME AFTER BOREHOL	E COMPLETION
12. OVERBURDEN THICKNESS 13+ FT		NA	
13. DEPTH DRILLED INTO BEDROCK NA	17. OTHER WATI	ER LEVEL MEASUREMENTS (INLCLUDE	DATE/T(ME)
14. TOTAL DEPTH OF BOREHOLE 1317		NH	
18. GEOTECHNICAL SAMPLES UNDISTURBED:	DISTURBED:	19. TOTAL NUMBER OF CORE B	1 44 4
20. CHEMICAL SAMPLES CHEMEXALMET PA	PAD: NA OTHER:		DRE RECOVERY %
22. DISPOSITION OF BOREHOLE DATE STARTED/INSTAL	LED (3) 23/10; 1035	DATE COMPLETED/ABANDONED:	3/23/10 - 1140
BACKFILL TYPE: GROUT F BENTONITE		INT MONITORING WELL	
23. NOTES BKG: ≤ Background BGS: Below Gro	und Surface CPM: Counts p	er Minute PPM: Parts per M	llion
: First Water Encountered	: Static Water Level	NA: Not Applicable	
LOCATION SKETCH/COMMENTS		SCALE:	None
	WSASD WARD		
amanda Irenton 03/20	QAQC SIGNATURE PATE		BOREHOLE NUMBER  WSASB-021





Ravenna Army Ammunition Plant

8451 State Route 5

Ravenna, Ohio 44266

Portage County

## RVAAP-45 Wet Storage Area WSAsb-021

: 2357472.23

 Start Date
 : 03/23/10; 1035

 End Date
 : 03/23/10; 1140

 Northing Coord.
 : 559012.41

Total Depth of Boring : 13.0'

Easting Coord.

Drilling Company : Frontz Drilling
Driller : Jeremy Leckrone
Designation of Drill : Geoprobe 6620DT
Type of Drill Rig : Direct Push Technology

Geologist : Amanda Trenton
Oversight Company : SAIC
Borehole Diameter : 2"

Sampling Equipment : 1.5" x 4' Long Acetate Liner

: 2" x 4' Dual Tube : 3" Hand Auger

			Totage county	ar Deptir or Borning . 13.0	9			
Depth in feet	USCS Symbol	USCS Graphic	Description		Analyses	Recovery	Collection Interval	Comments
0-	ML	ПП	(0.0' - 0.3') SILT (ML); little Clay; some (	Gravel <3/4":				Soil Color Chart
1-			(0.0 - 0.3) SIET (with), little clay, some of 10YR3/2 very dark grayish brown; loose nonplastic; organics throughout.  (0.3' - 2.75') CLAY (CL); some Silt; trace 2.5Y5/2 gray brown, 5Y6/1 gray, and 10 brown; medium stiff; damp; low plasticity	e; damp; e Gravel, <1/4"; DYR5/6 yellowish	WSAsb-021-5611-SO collected from 0.0' - 1.0' or 03/23/10 at 1055 for TAL Metals + Hg, PAHs, and Explosives.	1.071.0		Munsell 2000 Rev. Ed.
-	-				WSAsb-021-5612-SO			
3-	ML		(2.75' - 4.25') SILT (ML); some very fine Clay; 2.5Y6/6 olive yellow, 2.5Y5/4 light 6/N gray; damp.	e grained Sand; little t olive brown, and	collected from 1.0' - 4.0' or 03/23/10 at 1108 for TAL Metals + Hg, PAHs, and Explosives.	2.6'/3.0'		
4-								
5-			(4.25' - 7.9') CLAY (CL); some Silt; 10Yl brown, 6/N gray, and 2.5Y6/6 olive yello low plasticity.		WSAsb-021-5613-SO, WSAsb-021-6201-FD, & WSAsb-021-6205-QA collected from 4.0' - 7.0' or 03/23/10 at 1120 for TAL	3.1'/3.0'		
6- - - 7- -	CL		(6.5' - 7.9') Siltier.		Metals + Hg, PAHs, and Explosives.			
8-	SM		(7.9' - 9.1') SAND and SILT (SM); 2.5Y5 stiff; damp to moist.	5/4 yellowish brown;		2.85'/3.0'		
9-	$\vdash$		(9.1' - 10.6') Weathered SHALE and SIL	LT (SH/ML); 2.5Y5/4	WSAsb-021-5614-SO,			
10-	ML		yellowish brown; stiff; brittle; damp until	10.1' then dry.	WSAsb-021-6202-FD, & WSAsb-021-6206-QA collected from 7.0' - 13.0' c 03/23/10 at 1135 for TAL Metals + Hg, PAHs, and	on		
11-		 	(10.6' - 13.0') Weathered SHALE (SH); brown; hard; brittle; dry.	2.5Y5/4 yellowish	Explosives.			
12-	SH		(11.5' - 13.0') Shale is 2.5Y4/1 dark gray	y.		3.9'/3.0'		
13-								
			Boring terminated at 13.0 ft bgs.					Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated. 0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP. Samples were composited and homogenized for all analyses.

		DISTRICT		BOREHOLE NUMBER
HTRW DRILLING	LOG	USACE - Louis	/ille	W5A58-022
1. COMPANY NAME		2. DRILLING SUBCON	ITRACTOR	
SAIC		Frontz Drilling		SHEET 1 OF 2
3. PROJECT RUMAP	PBA D8 RI	4. LOCA	nvaar 6451 State Hout	e 5 Ravenna, OH 44266
5. NAME OF DRILLER TORKING FOR SAMPLING EQU	LECKRONE	!	MODEL OF DRILL Geoprobe	0620 DT
		8. BOREI	HOLE LOCATION N -559458, \$731	0' E-2357500 85
3" XI" HAND	AUGER	5: 301117	NAD 83	
1,5" x4' Acon	ate uner	15. DEPT	BATE/TIME STARTED: 0755 H GROUNDWATER ENCOUNTERED 7	COMPLETED: 1000
2" x 4' Dua	LTUBE		H TO WATER/ELAPSED TIME AFTER BORE	HOLE COMPLETION
12. OVERBURDEN THICKNESS 13+	- FT		NA	
13. DEPTH DRILLED INTO BEDROCK	NA	17. OTHE	R WATER LEVEL MEASUREMENTS (INLCL)	JDE DATE/TIME)
14. TOTAL DEPTH OF BOREHOLE	ろドナ		NA	
18. GEOTECHNICAL SAMPLES	UNDISTURBED:	DISTURBED:	19. TOTAL NUMBER OF CO	RE BOXES NA NA
20. CHEMICAL SAMPLES	CHEM: EXALIMET PAHRAL			L CORE RECOVERY % NA
22. DISPOSITION OF BOREHOLE		03/23/10:0755	DATE COMPLETED/ABANDONED:	03/23/10; 1000
BACKFILL TYPE: GROUT	₩ BENTONITE	TEMPORARY W		
23. NOTES BKG: ≤ Background	BGS: Below Ground		ounts per Minute PPM: Parts pe	er Million
: First Water E	ncountered	: Static Water Level	NA: Not Applicable	
LOCATION SKETCH/COMME	NTS		SCALE:	None
		Sylf Sylf Share of the second	2 12 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	
geologist signature/date Comanda Crevi	itin ozlezilio	QAQC SIGNATURE/DATE	colia	BOREHOLE NUMBER WS9SB-022





Ravenna Army Ammunition Plant

8451 State Route 5

Ravenna, Ohio 44266

## **RVAAP-45** Wet Storage Area WSAsb-022

: 559458.0730

: 2357500.8575

Start Date : 03/23/10; 0755 **End Date** : 03/23/10; 1000

Northing Coord.

Easting Coord.

**Drilling Company** Driller

Type of Drill Rig

Geologist

: Frontz Drilling : Jeremy Leckrone : Geoprobe 6620DT

Designation of Drill : Direct Push Technology : Amanda Trenton

Oversight Company : SAIC Borehole Diameter

Sampling Equipment : 1.5" x 4' Long Acetate Liner : 2" x 4' Dual Tube

: 3" Hand Auger

			Portage County	Easting Coord. : 238 Total Depth of Boring : 13.	0'			: 3" Hand Auger
Depth in feet	USCS Symbol	USCS Graphic	Descriptio	on	Analyses	Recovery	Collection Interval	Comments
1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	ML CL CL GC		(0.0' - 0.3') SILT(ML); little Clay; so angular; 10YR3/2 very dark grayisl from water in ditch; nonplastic. (0.3' - 0.8') CLAY (CL); little Silt; trasubangular; trace Sand lenses; 2.5 7.5YR6/6 reddish yellow, and 5Y5/stiff; damp; medium plasticity. (0.8' - 4.7') CLAY (CL); little Silt; trasubangular; trace Sand lenses; 2.5Y6/4 light yellowish brown, little brown, and 2.5Y5/1 gray; medium medium plasticity.  (4.7' - 5.7') CLAY and GRAVEL (Gsubangular; some Sand; 10YR5/4 loose; wet. (5.7' - 7.5') CLAY (CL); little Silt; trasubangular; some Sand; 10YR5/4 loose; wet. (6.9' - 7.5') Siltier.	n brown; loose; wet  ace Gravel, <1/2", 575/3 brown, trace '2 olive gray; medium  ace Gravel, <1/4"; 10YR5/6 yellowish stiff, stiff by 2.0'; dry;  C); Gravel is <1" and yellowish brown;  ace Gravel, <1/2"; '6/1 gray; stiff; dry;	WSAsb-022-5615-SO collected from 0.0' - 1.0' on 03/23/10 at 0850 for VOCs, SVOCs, PCBs, Pesticides, Explosives, Propellants, an TAL Metals + Hg.  WSAsb-022-5616-SO, WSAsb-022-6200-FD, & WSAsb-022-6204-QA collected from 1.0' - 4.0' on 03/23/10 at 0915 for VOCs, SVOCs, PCBs, Pesticides, Explosives, Propellants, an TAL Metals + Hg.  WSAsb-022-5617-SO collected from 4.0' - 7.0' on 03/23/10 at 0935 for VOCs, SVOCs, PCBs, Pesticides, Explosives, Propellants, an TAL Metals + Hg.	d A 2.9'/3.0' B 3.0'/4.0' C 3.9'/4.0' d 3.0'/3.0'		Soil Color Chart Munsell 2000 Rev. Ed.  Sample interval was wet due to surface water in ditch. Soil was dry. VOCs were collected from first core.
9-10-11-12-	SH		(10YR5/4 yellowish brown; wet. (7.8' - 13.0') Weathered SHALE (S brown, little 10YR5/6 yellowish brodry. (9.9' - 10.5') Shale is black with sorbrown.	wn; brittle; crumbly;	WSAsb-022-5618-SO collected from 7.0' - 13.0' or 03/23/10 at 0955 for VOCs, SVOCs, PCBs, Pesticides, Explosives, Propellants, an TAL Metals + Hg.			
13			Boring terminated at 13.0 ft bgs.					Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated.

0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP. Samples were composited and homogenized for all analyses except VOCs. Twin boreholes were drilled to obtain volume required for analyses.

	DISTRICT		BOREHOLE NUMBER
HTRW DRILLING LOG	USACE - Louisy	rille	WSASB-023
1. COMPANY NAME	2. DRILLING SUBCON	TRACTOR	
SAIC	Frontz Drilling		SHEET 1 OF 2
3. PROJECT RUMAP PBA OF R	4. LOCAT	ION RVAAP 8451 State Rou	ute 5 Ravenna, OH 44266
5. NAME OF DRILLER TERMY LITTERONS 7. SIZES AND TYPES OF SAMPLING EQUIPMENT	6. MAKE/I	MODEL OF DRILL Geoprobe	6620DT
7. SIZES AND TYPES OF SAMPLING EQUIPMENT	8. BOREH	IOLE LOCATION N-559473.00	E-2357031.00
3"x1" HAND AVGER	9. SURFA	CE ELEVATION/DATUM MD83	
15" x4' AcerATE LI	10. DRILL	DATE/TIME STARTED: 1005	COMPLETED: U50
2" X4' Dun TUBE	15. DEPTI	GROUNDWATER ENCOUNTERED	IA .
	16. DEPTI	TO WATER/ELAPSED TIME AFTER BOR	REHOLE COMPLETION
12. OVERBURDEN THICKNESS > 13FT		NA	
13. DEPTH DRILLED INTO BEDROCK NA	17. OTHE	R WATER LEVEL MEASUREMENTS (INLO	LUDE DATE/TIME)
14. TOTAL DEPTH OF BOREHOLE 13FT		NA	
18. GEOTECHNICAL SAMPLES UNDISTURBED:	DISTURBED: -	19. TOTAL NUMBER OF C	ORE BOXES NA
20. CHEMICAL SAMPLES CHEM: METICAL			TAL CORE RECOVERY %
22. DISPOSITION OF BOREHOLE DATE STARTED/INS	TALLED: 03/23/10 ; 14:05	DATE COMPLETED/ABANDONE	
BACKFILL TYPE: GROUT 🔽 BENTON		ELL POINT MONITORING	
23. NOTES BKG: ≤ Background BGS: Below €	Ground Surface CPM: Co	unts per Minute PPM: Parts	per Million
: First Water Encountered	: Static Water Level	NA: Not Applicable	
LOCATION SKETCH/COMMENTS		SCALE:	None
		22 Yes	
SEOLOGIST SIGNATURE/DATE			BOREHOLE NUMBER
Comando nento 03/2:	3/10 RS GNATURE/DATE L	126/10	
WHIWHELL JUNEON WILL	7/10/ 1/2	11-0114	WSASB-023





#### RVAAP-45 Wet Storage Area WSAsb-023

: 13.0'

 Start Date
 : 03/23/10; 1605

 End Date
 : 03/23/10; 1650

 Northing Coord.
 : 559473.00

 Easting Coord.
 : 2357031.00

Total Depth of Boring

Drilling Company : Frontz Drilling
Driller : Jeremy Leckrone
Designation of Drill : Geoprobe 6620DT
Type of Drill Rig : Direct Push Technology
Geologist : Amanda Trenton

Oversight Company : SAIC
Borehole Diameter : 2"

Sampling Equipment : 1.5" x 4' Long Acetate Liner

: 2" x 4' Dual Tube : 3" Hand Auger

RVAAP PBA 2008 Remedial Investigation Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, Ohio 44266 Portage County

Collection Interval Graphic Symbol Depth in feet Recovery USCS ( USCS Analyses Description Comments ML (0.0' - 0.25') SILT (ML); some Clay; 10YR4/2 dark grayish Soil Color Chart Munsell 2000 Rev. Ed. brown; loose; damp; organics throughout. 1.0'/1.0' WSAsb-023-5619-SO (0.25' - 1.65') CLAY (CL); little Silt; 10YR4/3 brown, collected from 0.0' - 1.0' on CL 10YR5/6 yellowish brown, and N7/ light gray; medium 03/23/10 at 1622 for TAL stiff; damp to dry. Metals + Hg, PAHs, and Explosives. (1.65' - 2.1') SAND (SW); little fines; 2.5Y5/4 light olive SW 2 brown; loose; wet; nonplastic. WSAsb-023-5620-SO ML (2.1' - 2.6') SILT (ML); some fine grained Sand; trace Clay; collected from 1.0' - 4.0' on 2.65'/3.0' 2.5Y5/4 light olive brown; stiff; damp. 03/23/10 at 1630 for TAL 3 Metals + Hg, PAHs, and (2.6' - 6.7') Fine grained SAND and SILT (SM); 2.5Y5/4 Explosives. light olive brown; medium dense; damp. (3.5' - 4.0') Softer. (4.0' - 5.0') Moist. 4 SM WSAsb-023-5621-SO 5 collected from 4.0' - 7.0' on 03/23/10 at 1637 for TAL 2.75'/3.0' Metals + Hg, PAHs, and Explosives. 6 (6.7' - 10.7') Very fine to fine grained SAND (SW); little Silt; 2.5Y5/4 light olive brown; dense; damp, moist in pockets; nonplastic. 8 3.35'/3.0' 9 (9.2' - 10.7') Very dense. WSAsb-023-5622-SO collected from 7.0' - 13.0' on 10 (10.0' - 10.7') Medium grained SAND; moist. 03/23/10 at 1650 for TAL Metals + Hg, PAHs, and Explosives. (10.7' - 13.0') SILT (ML); little Sand; trace Gravel; 10YR5/4 11 yellowish brown; stiff; dry. 3.0'/3.0' ML 12 13 Boring terminated at 13.0 ft bgs. Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated.
0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP.
Samples were composited and homogenized for all analyses.

1. COMPANY NAME  SAIC  3. PROJECT ENTRY - PBACE RI  NAME OF DRILLER ELEMAN I EXPONE ETHEN FRONTE - HE SIZES AND TYPES OF SAMPLING EQUIPMENT  3" X \ HAND PUBER  1. 5" X \ A CETATE LINER  2" X \ DUAL TUBE  2. OVERBURDEN THICKNESS   3 + FT  1. DEPTH DRILLED INTO BEDROCK NA  1. TOTAL DEPTH OF BOREHOLE  3. GEOTECHNICAL SAMPLES  CHEMICAL SAMPLES  CHEMICAL SAMPLES  CHEMICAL SAMPLES	9. SURFAC 10. DRILL I 15. DEPTH	RACTOR  ON RVAAP 8451 State F  ODEL OF DRILL GEODIC  DLE LOCATION N 559 26 1	6920 COMPLETED: 3/24/10: 110
SAIC  3. PROJECT EVENDE - PRACE RITED FROME - NO NAME OF DRILLER BLEEN, I EXCONE FIRM FROME - NO SIZES AND TYPES OF SAMPLING EQUIPMENT  3" X 1" HAND PUBER  1. 5" X 4" A CETATE LINER  2" X 4" DUAL TUBE  2. OVERBURDEN THICKNESS 13 + FT  1. DEPTH DRILLED INTO BEDROCK NA  1. TOTAL DEPTH OF BOREHOLE  3. GEOTECHNICAL SAMPLES  CHEMICAL SAMPLES  CHEMICAL SAMPLES  CHEMICAL SAMPLES  CHEMICAL SAMPLES  CHEMICAL SAMPLES  CHEMICAL SAMPLES	Frontz Drilling  4. LOCATIO  6. MAKE/M  8. BOREHO  9. SURFAC  10. DRILL I  15. DEPTH	ON RVAAP 8451 State F ODEL OF DRILL GEODIC DLE LOCATION N - 559 20 1 DE ELEVATION DATUM P DATE/TIME STARTED: 3 24 10 GROUNDWATER ENCOUNTERED TO WATER/ELAPSED TIME AFTER	Route 5 Ravenna, OH 44266  Die 15 162 0 DT  15794 E 735 1002:  160 83  16920 COMPLETED: 3/24/10: 110
3. PROJECT EVERY - PRACE RILLER SIZES AND TYPES OF SAMPLING EQUIPMENT  3" X 1" HAND PUBER  1. 5" X 4" A CETATE LINER  2" X 4" DUAL TUBE  1. OVERBURDEN THICKNESS 13 + FT  1. DEPTH DRILLED INTO BEDROCK NA  1. TOTAL DEPTH OF BOREHOLE  1. GEOTECHNICAL SAMPLES  1. CHEMICAL SAMPLES  CHEMICAL SAMPLES  CHEMICAL SAMPLES  CHEMICAL SAMPLES  CHEMICAL SAMPLES  CHEMICAL SAMPLES	4. LOCATION 6. MAKE/M 8. BOREHO 9. SURFACTIO. ORILL I 15. DEPTH 16. DEPTH	DEL LOCATION NOTICE ELEVATION DATUM POLICE ELEVATION DATUM POLICE ELEVATION DATUM POLICE ELEVATION STARTED: 3 24 16 GROUNDWATER ENCOUNTERED TO WATER/ELAPSED TIME AFTER	Route 5 Ravenna, OH 44266  Die 15 162 0 DT  15794 E 735 1002:  160 83  16920 COMPLETED: 3/24/10: 110
SIZES AND TYPES OF SAMPLING EQUIPMENT  3" X 1 HAND PUBER  1. 5" Y 4' A CETATE LINER  2" X 4' DUAL TUBE  OVERBURDEN THICKNESS 13 + FT  DEPTH DRILLED INTO BEDROCK NA  TOTAL DEPTH OF BOREHOLE  GEOTECHNICAL SAMPLES  CHEMICAL SAMPLES  CHEMICAL SAMPLES  CHEMICAL SAMPLES  CHEMICAL SAMPLES  CHEMICAL SAMPLES  CHEMICAL SAMPLES	6. MAKE/M 8. BOREHO 9. SURFAC 10. DRILL I 15. DEPTH	DEL LOCATION NOTICE ELEVATION DATUM POLICE ELEVATION DATUM POLICE ELEVATION DATUM POLICE ELEVATION STARTED: 3 24 16 GROUNDWATER ENCOUNTERED TO WATER/ELAPSED TIME AFTER	DDB [D [0 2 0 DT] 15794 E 73570025 1970 83 1920 COMPLETED: 3/24/10: 110
OVERBURDEN THICKNESS 13 + FT  DEPTH DRILLED INTO BEDROCK NA  TOTAL DEPTH OF BOREHOLE  CHEMICAL SAMPLES  CHEMICAL SAMPLES  TOTAL DEPTH DRILLED INTO BEDROCK NA  CHEMICAL SAMPLES  CHEMICAL SAMPLE	9. SURFAC 10. DRILL I 15. DEPTH	DLE LOCATION 159 20 CE ELEVATION/DATUM P STARTED: 3 24 10 CE EROUNDWATER ENCOUNTERED TO WATER/ELAPSED TIME AFTER	15794 E 23570025 190 83 1920 COMPLETED: 3/24/10: 110
3" X 1" HAND PUBER  1. 5" X 4" A CETATE LINER  2" X 4" DUAL TUBE  OVERBURDEN THICKNESS 13 + FT  DEPTH DRILLED INTO BEDROCK NA  TOTAL DEPTH OF BOREHOLE 13 FM  GEOTECHNICAL SAMPLES UNDISTURBED: ————————————————————————————————————	9. SURFAC 10. DRILL I 15. DEPTH	DE ELEVATION DATUM P 20 NO DATE/TIME STARTED: 3 24 10 GROUNDWATER ENCOUNTERED TO WATER/ELAPSED TIME AFTER	15794 E 23570025 190 83 1920 COMPLETED: 3/24/10: 110
1.5" X 4" A CETATE LINER  2" X 4" DUAL TUBE  OVERBURDEN THICKNESS 13 + FT  DEPTH DRILLED INTO BEDROCK NA  TOTAL DEPTH OF BOREHOLE 13 FM  GEOTECHNICAL SAMPLES UNDISTURBED: ————————————————————————————————————	10. DRILL I 15. DEPTH	DATE/TIME STARTED: 3 24 10. GROUNDWATER ENCOUNTERED TO WATER/ELAPSED TIME AFTER	1920 COMPLETED: 3/24/10: 110
OVERBURDEN THICKNESS 13 + FT  DEPTH DRILLED INTO BEDROCK NA  TOTAL DEPTH OF BOREHOLE 13 FM  GEOTECHNICAL SAMPLES UNDISTURBED:	15. DEPTH	GROUNDWATER ENCOUNTERED TO WATER/ELAPSED TIME AFTER	6920 COMPLETED: 3/24/10: 110
OVERBURDEN THICKNESS 13 + F-1  DEPTH DRILLED INTO BEDROCK NA  TOTAL DEPTH OF BOREHOLE 13 F-1  GEOTECHNICAL SAMPLES UNDISTURBED: CHEMICAL SAMPLES CHEM: MOTIFIED DEPTH DE	16, DEPTH	TO WATER/ELAPSED TIME AFTER	NA BOREHOLE COMPLETION
DEPTH DRILLED INTO BEDROCK NA  TOTAL DEPTH OF BOREHOLE 3 FM  GEOTECHNICAL SAMPLES UNDISTURBED: ————————————————————————————————————			BOREHOLE COMPLETION
DEPTH DRILLED INTO BEDROCK NA  TOTAL DEPTH OF BOREHOLE 3 FM  GEOTECHNICAL SAMPLES UNDISTURBED: CHEMICAL SAMPLES CHEMIMETIME DRUPAD:	17. OTHER	NA	
GEOTECHNICAL SAMPLES UNDISTURBED: CHEMICAL SAMPLES CHEMIMOTIPAL DOCUMENT.		R WATER LEVEL MEASUREMENTS (I	NI CLUDE DATE//MEL
GEOTECHNICAL SAMPLES UNDISTURBED:			NEGEOUE DATE TIME
CHEMICAL SAMPLES CHEMIMETIAL DATE I	DISTURCES	NA 19 TOTAL NUMBER O	OF CORE BOXES NA
CHEMIMET/PHE POPULA	NA OTHER:		TOTAL CORE RECOVERY %
DISPOSITION OF BOREHOLE DATE STARTED INSTALLED: 03			ONED: 03/24/14; 1105
CKFILL TYPE: GROUT FENTONITE	TEMPORARY WE		,
NOTES BKG: ≤ Background BGS: Below Ground Surface			arts per Million
	tic Water Level	NA: Not Applicable	
<u> </u>			P. None
DCATION SKETCH/COMMENTS		SCALE	E: None
	SD -CJL		





Ravenna Army Ammunition Plant

8451 State Route 5

Ravenna, Ohio 44266

Portage County

## **RVAAP-45** Wet Storage Area WSAsb-024

: 2357002.258

Start Date : 03/24/10; 0920 **End Date** : 03/24/10; 1120 Northing Coord. : 559261.5794

Total Depth of Boring : 13.0'

Easting Coord.

**Drilling Company** : Frontz Drilling Driller : Jeremy Leckrone Designation of Drill : Geoprobe 6620DT

Type of Drill Rig : Direct Push Technology : Emily Cunningham

: SAIC Oversight Company Borehole Diameter

Geologist

Sampling Equipment : 1.5" x 4' Long Acetate Liner

: 2" x 4' Dual Tube : 3" Hand Auger

Depth in feet	USCS Symbol	USCS Graphic	Description	Analyses	Recovery	Collection Interval	Comments
1-	ML		(0.0' - 1.0') Clayey SILT (ML); little 1/2" Gravel; trace Sand; 10YR5/8 yellowish brown and 10YR6/1 gray; moist; slight plasticity; trace organics (roots).  (1.0' - 2.2') SILT (ML); some Clay; 10YR4/6 dark yellowish brown and 10YR6/1 gray; moist; slight plasticity.	WSAsb-024-5623-SO collected from 0.0' - 1.0' on 03/23/10 at 0920 for TAL Metals + Hg, PAHs, and	1.0'/1.0'		Soil Color Chart Munsell 2000 Rev. Ed.
2-	ML		(2.2' - 5.1') Sandy SILT (ML); trace fine Gravel; 2.5Y5/4 light olive brown; damp; nonplastic.	Explosives.  - WSAsb-024-5624-SO, WSAsb-024-6207-QA, & WSAsb-024-6208-FD collected from 1.0' - 4.0' on 03/24/10 at 1025 for TAL Metals + Hg, PAHs, and Explosives.	A 2.4'/3.0' B 3.2'/4.0'		
5-0	SM		(5.1' - 7.0') Silty SAND (SM); 2.5Y5/4 light olive brown; stiff; moist to wet; nonplastic.	WSAsb-024-5625-SO collected from 4.0' - 7.0' on 03/24/10 at 1043 for TAL Metals + Hg, PAHs, and Explosives.	2.9'/3.0'		
7-8-			(6.5' - 7.0') Hard; dry.  (7.0' - 12.5') Silty SAND (SM); 1/2" Gravel; 2.5Y5/6 light olive brown; medium dense; dry; nonplastic.		3.4'/3.0'		
10-	SM		(11.5' - 12.5') Less dense, crumbles easily.	WSAsb-024-5626-SO collected from 7.0' - 13.0' on 03/24/10 at 1105 for TAL Metals + Hg, PAHs, and Explosives.	3.8'/3.0'		
12-	SM		(12.5' - 13.0') Fine to medium grained SAND (SM); little Silt; 10YR5/8 yellowish brown; loose; moist; nonplastic. Boring terminated at 13.0 ft bgs.				Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated. 0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP. Samples were composited and homogenized for all analyses.

Twin boreholes were drilled to obtain volume required for analyses.

ITRW DRILLING LOG	USACE - Louisy	rille		BOREHOLE N	shans
1. COMPANY NAME SAIC	2. DRILLING SUBCON	TRACTOR		SHEET	1 OF 25
3. PROJECT KURAP PBA 108 RF	4. LOCAT	TON RVAAP 8451	State Route	5 Ravenna	OH 44266
	6. MAKE/		Geoprobe (		
SIZES AND TYPES OF SAMPLING EQUIPMENT	8. BORE	OLE LOCATION N 559	2435618	E-235	5003.37/
1.5" x4' ACEPATE LINER	9. SURFA	CE ELEVATION/DATUM	AD 83		
V' x 4' DUAL TUBE. 44" x 5' HOLOW STEM AUGO	10. DEPT	DATE TIME STARTED: H GROUNDWATER ENCOUR	0830	COMPLETED	1105
OVERBURDEN THICKNESS 23.8FT	16. DEPT	H TO WATER/ELAPSED TIM	AFTER BOREH	OLE COMPLETION	ON
DEPTH DRILLED INTO BEDROCK NA	17. OTHE	R WATER LEVEL MEASURE	MENTS (INLCLUE	E DATE/TIME)	0
TOTAL DEPTH OF BOREHOLE 28 +5			NA		
GEOTECHNICAL SAMPLES UNDISTURBED: TWO	DISTURBED:	19. TOTAL N	UMBER OF COR	BOXES N	IA .
CHEMICAL SAMPLES CHEMILL TO THE RAD:	NA OTHER:			CORE RECOVE	BY % MA
DISPOSITION OF BOREHOLE DATE STARTED/INSTALLED	24/10	DATE COMPLETED	ABANDONED (	3/24/10	
CKFILL TYPE: GROUT W BENTONITE	TEMPORARY V	/ELL POINT	MONITORING WI	il.	
. NOTES BKG: ≤ Background BGS: Below Ground Sur	ace CPM: C	ounts per Minute	PPM: Parts per	Millon	
: First Water Encountered :	Static Water Level	NA: Not Applicab	le		
OCATION SKETCH/COMMENTS			SCALE:	None	
EDIOGIST SIGNATURE/DATE Omanda Trento 3/24/10	AVOC SIGNATURE/DATE	126/110		BOREHOLE N	UMBER 56-025





Ravenna Army Ammunition Plant

8451 State Route 5

Ravenna, Ohio 44266

## RVAAP-45 Wet Storage Area WSAsb-025

 Start Date
 : 03/24/10; 0830

 End Date
 : 03/24/10; 1105

 Northing Coord.
 : 559243.5618

 Easting Coord.
 : 2355003.32

Drilling Company : Frontz Drilling
Driller : Jeremy Leckrone
Designation of Drill : Geoprobe 6620DT
Type of Drill Rig : Direct Push Technology

Geologist : Amanda Trenton
Oversight Company : SAIC
Borehole Diameter : 8"

Sampling Equipment : 4.25" Hollow Stem Augers

: 28" x 3" Shelby Tube

		Г	Portage County	Easting Coord. : 235 Total Depth of Boring : 28.	3.5 ft		. 26 x 3 Shelby Tube	
Depth in feet	USCS Symbol	USCS Graphic	Descriptio	on	Analyses	Recovery	Collection Interval	Comments
0— - - 1— -	SM		(0.0' - 1.5') Medium grained SAND sandstone Gravel; 10YR5/6 yellow brown, and 5YR6/6 reddish yellow nonplastic; trace slag, coal, and br sandstone is micaceous.  (1.5' - 6.6') SILT (ML); some fine gr	rish brown, 10YR5/3 medium dense; dry; ick fill; sand and				Soil Color Chart Munsell 2000 Rev. Ed.
3-			trace Gravel, <1/2", subangular; 2. brown; medium stiff; dry.		Shelby Tube WSAsb-025-5627-SO	3.25'/4.0'		
4	ML		(6.0' - 6.6') Sand content increases		collected from 4.0' - 5.2' o 03/24/10 at 1036 for Porosity, Bulk Density, Moisture Content, Total Organic Carbon, Permeability, and Grain S Fraction Analysis.			
7-   8-   9-	SM		(6.6' - 8.8') Fine and very fine grain Silt; 10YR5/4 yellowish brown; den	se; moist.				
10-			Silt; 10YR5/4 yellowish brown and brown; dense; dry to damp in pock (10.0' - 10.8') Siltier; little <1/4" Gra	10YR5/6 yellowish ets. avel.		4.0'/4.0'		
11-	sw		(10.8' - 14.1') Coarser grained San subangular). (12.5' - 14.1') Hard.	d and Gravel (<1"	Shelby Tube WSAsb-025-5628-SO collected from 12.0' - 13.1 (Shelby refusal) on 03/24, at 1042 for Porosity, Bulk Density, Moisture Content Total Organic Carbon, Permeability, and Grain S Fraction Analysis.	/10 t,		
15-	sw		(14.1' - 15.8') Fine and very fine gr 10YR5/3 brown & 10YR5/6 yellowi moist.	ained SAND (SW); sh brown; dense;				Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated. Shelby tubes sealed with wax and capped.

WSAsb-025

(Page 1 of 2)





Ravenna Army Ammunition Plant

8451 State Route 5

Ravenna, Ohio 44266

Portage County

Boring backfilled with sodium bentonite chips and hydrated.

Shelby tubes sealed with wax and capped.

## RVAAP-45 Wet Storage Area WSAsb-025

 Start Date
 : 03/24/10; 0830

 End Date
 : 03/24/10; 1105

 Northing Coord.
 : 559243.5618

 Easting Coord.
 : 2355003.32

Total Depth of Boring : 28.0 ft

Drilling Company : Frontz Drilling
Driller : Jeremy Leckrone
Designation of Drill : Geoprobe 6620D

Type of Drill Rig

Geologist

: Geoprobe 6620DT : Direct Push Technology : Amanda Trenton

Oversight Company : SAIC
Borehole Diameter : 8"

Sampling Equipment : 4.25" Hollow Stem Augers

WSAsb-025

(Page 2 of 2)

: 28" x 3" Shelby Tube

			Total Deptitor	Boiling . 26.0 it				
Depth in feet	USCS Symbol	USCS Graphic	Description	Analyses	;	Recovery	Collection Interval	Comments
15-	sw		Soil description located on page 1.					Soil Color Chart
16	SM		(15.8' - 19.5') Very fine grained SAND (SM); some some coarser grained Sand and Gravel, < 1", sub 10YR5/3 brown, little 10YR5/6 yellowish brown; h dry. Silt content increases with depth.	angular;		4.0'/4.0'		Munsell 2000 Rev. Ed.
20-	ML		(19.5' - 20.9') SILT (ML); some Sand; little Gravel, subangular; 2.5Y4/2 dark grayish brown, little 10Y yellowish brown.	<1.25", R5/6				
21 –	SS		(20.9' - 21.2') SANDSTONE; weathered; micaceo	us.				
22-	SW ML		(21.2' -22.0') Medium grained SAND (SW); some Sandstone fragments.  (22.0' - 23.3') SILT (ML); little Sand; little Gravel, 3/4", subangular; N4/ dark gray with some 10YR5 brown; hard; dry; low plasticity.	/4" - /3		4.0'/4.0'		
23 -								
24-	SH		(23.3' - 23.8') Weathered SHALE and SILT (SH); gray; hard; dry.  (23.8' - 28.0') Weathered SHALE (SH); 2.5Y6/1 g brittle; crumbly; dry.	/				
	1							
26-	SH					4.0'/4.0'		
27								
29			Boring terminated at 28 ft bgs. Offset and auger for Shelby tube collection.					
-	1							Coordinate System: NAD 83
30 —								,

	DISTRICT			BOREHOLE NUMBER
HTRW DRILLING LOG	USACE	- Louisville		WSASD-026
1. COMPANY NAME	2. DRILLIN	IG SUBCONTRACTOR		
SAIC	Frontz I	Drilling		SHEET 1 OF 2
3. PROJECT RUMAP POA Ø8 RI			451 State Rout	e 5 Ravenna, OH 44266
5. NAME OF DRILLER JORGHY LETTRONG 7. SIZES AND TYPES OF SAMPLING EQUIPMENT		6. MAKE/MODEL OF DRILL	Geoprobe (	U424DT
3"X1' HAND AUGER		9. SURFACE ELEVATION/DATUM	59131.69' NAD 83	E 2357047.47
15" XY ACETATE LINER		10. DRILL DATE/TIME STARTE	1340	COMPLETED: 1440
2" X4' DUALTUBE		15. DEPTH GROUNDWATER ENG 16. DEPTH TO WATER/ELAPSED	W 1	A SHOLE COMPLETION
12. OVERBURDEN THICKNESS >13 FT			NA	TIOLE CONFEE TON
13. DEPTH DRILLED INTO BEDROCK NA		17. OTHER WATER LEVEL MEAS	UREMENTS (INLCLI	UDE DATE/TIME)
14. TOTAL DEPTH OF BOREHOLE 13 FT			NA	
18. GEOTECHNICAL SAMPLES UNDISTURBED:	·	D: 19. TOT	AL NUMBER OF CO	11/7
CHEMI, YICT PAH ICX PC HAD!		OTHER:	21. TOTA	AL CORE RECOVERY %
BACKFILL TYPE: GROUT F BENTONITE		DATE COMPLI	ETED/ABANDONED:  MONITORING V	•
23. NOTES BKG: ≤ Background BGS: Below Ground S		CPM: Counts per Minute	PPM: Parts pe	
: First Water Encountered	: Static Water L		·	
LOCATION SKETCH/COMMENTS			SCALE:	None
		210		
		wshows		N.
		WS'		I N
		Carro		
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				tion to proper house it is
	DAVQC SIGNATUR	E/DATE		BOREHOLE NUMBER
Amanda Irenton 03/23/10	RG	0 4/26/10		WSA Sb-026
		8 71 71W		100010000





Ravenna Army Ammunition Plant

8451 State Route 5

Ravenna, Ohio 44266

Portage County

## RVAAP-45 Wet Storage Area WSAsb-026

 Start Date
 : 03/23/10; 1340

 End Date
 : 03/23/10; 1440

 Northing Coord.
 : 559131.69

 Easting Coord.
 : 2357047.47

Total Depth of Boring : 13.0'

Drilling Company : Frontz Drilling
Driller : Jeremy Leckrone
Designation of Drill : Geoprobe 6620DT
Type of Drill Rig : Direct Push Technology

Geologist : Amanda Trenton
Oversight Company : SAIC
Borehole Diameter : 2"

Sampling Equipment : 1.5" x 4' Long Acetate Liner

: 2" x 4' Dual Tube : 3" Hand Auger

			1 ortage county	Total Depth of Bolling . 13.				
Depth in feet	USCS Symbol	USCS Graphic	Descriptio	on	Analyses	Recovery	Collection Interval	Comments
1- 2- 3-	- - - - - - -		(0.0' - 0.8') SILT (ML); some Clay; brown; very soft, wet from surface organics throughout. (0.8' - 13.0') SILT (ML); some Clay 10YR5/6 yellowish brown, and 10Y medium dense; damp; exterior slig runoff.	water in ditch; ; 10YR5/3 brown, /6/1 greenish gray:	WSAsb-026-5629-SO collected from 0.0' - 1.0' or 03/23/10 at 1400 for TAL Metals + Hg, PAHs, and Explosives.  WSAsb-026-5630-SO collected from 1.0' - 4.0' or 03/23/10 at 1407 for TAL Metals + Hg, PAHs, and Explosives.	2.8'/4.0'		Soil Color Chart Munsell 2000 Rev. Ed.
5- 6-	- - - - - - - - - - - - - - - - - - -		(4.0' - 13.0') SILT is 5Y5/3 olive an brown; dry.  (5.0' - 13.0') Introduction of trace C <1/2", subangular.		WSAsb-026-5631-SO and MS/MSD collected from 4. 7.0' on 03/23/10 at 1420 fc TAL Metals + Hg, PAHs, a Explosives.	0' - or 3.2'/3.0'		
8- 9-	-		(7.5' - 13.0') Very stiff.		WSAsb-026-5632-SO collected from 7.0' - 13.0' o 03/23/10 at 1440 for TAL	3.5'/3.0'		
11-	-		(11.5' - 13.0') Damp.  Boring terminated at 13.0 ft bgs.		Metals + Hg, PAHs, and Explosives.	4.0'/3.0'		Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated. 0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP. Samples were composited and homogenized for all analyses.

UTDW DDILLING LOC	DISTRICT		BOREHOLE NUMBER
HTRW DRILLING LOG	USACE - Lo	uisville	WSAS3-027
1. COMPANY NAME SAIC	2. DRILLING SUB Frontz Drillin		SHEET 1 OF 2
3. PROJECT RUAM P PBA OS RI			te 5 Ravenna, OH 44266
NAME OF DRILLER		AKE/MODEL OF DRILL Geoprobe	ININA DIT
NAME OF DRILLER JOREY LECKRONE SIZES AND TYPES OF SAMPLING EQUIPMENT	8.80	OREHOLE LOCATION - 57 #4 4.5	1000001
3"x1" HAND AVOER 115"x4" ACETATE UNER 2"x4" DUAL TUBE	9. 51	URFACE ELEVATION/DATUM 047 25	1 6 235 7011.73
151 x4' ACDATE LINEK	10. 0	PATERINE STARTED: 1445	COMPLETED: 15.50
113 PT NECEMBER CASE	15.0	DEPTH GROUNDWATER ENCOUNTERED 7	15 FT
2" 14' DUAL TUBE	16. 0	DEPTH TO WATER/ELAPSED TIME AFTER BOR	
OVERBURDEN THICKNESS 713 PT		NA	
DEPTH DRILLED INTO BEDROCK NA	17. 0	OTHER WATER LEVEL MEASUREMENTS (INLCI	
TOTAL DEPTH OF BOREHOLE		MH	-
GEOTECHNICAL SAMPLES UNDISTURBED:	DISTURBED:	19. TOTAL NUMBER OF CO	DRE BOXES NA
CHEMICAL SAMPLES CHEM: NOT PA PAR	D: NA OTH	HER. —— 21. TOT	AL CORE RECOVERY %
DATE STARTED/INSTALLED		DATE COMPLETED/ABANDONED	03/23/10 /1550
ACKFILL TYPE: GROUT F BENTONITE	TEMPORA	RY WELL POINT MONITORING	
NOTES BKG: ≤ Background BGS: Below Ground	Surface CPf	M: Counts per Minute PPM: Parts p	per Million
: First Water Encountered	: Static Water Level	NA: Not Applicable	
OCATION SKETCH/COMMENTS		SCALE:	None
OCATION SKETCHICOMMENTS		OOALL.	140116
		DICH.	
mound }			
		NEW UPS CORDS:	1 6 205000 001
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1025PT		TO MAKE IT	ACCESSIBLE
Suco St	OF ON TEXT INTTITUT	toe SAMPLING	W THE GOOPEDE
Therewa	TOT INTIMO		BOREHOLE NUMBER
EDIOGIST SIGNATURE/DATE	QA/QC SIGNATURE/D	Vila III	
(imanela henton 033	14/1/2	4120110	WSASb-027



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13



RVAAP PBA 2008 Remedial Investigation

Ravenna Army Ammunition Plant

8451 State Route 5

Ravenna, Ohio 44266

#### **RVAAP-45** Wet Storage Area WSAsb-027

Start Date : 03/23/10; 1445 **End Date** : 03/23/10; 1550 Northing Coord. : 559043.221 Easting Coord. : 2357007.016

**Drilling Company** : Frontz Drilling Driller : Jeremy Leckrone Designation of Drill : Geoprobe 6620DT Type of Drill Rig : Direct Push Technology Geologist : Amanda Trenton

**Oversight Company** : SAIC **Borehole Diameter** 

Sampling Equipment : 1.5" x 4' Long Acetate Liner

> : 2" x 4' Dual Tube : 3" Hand Auger

Portage County Total Depth of Boring : 13.0' Collection Interval Graphic Symbol Depth in feet Recovery USCS ( USCS Analyses Description Comments 0 ML (0.0' - 0.4') SILT (ML); some Sand; some Gravel, <1"; Soil Color Chart Munsell 2000 Rev. Ed. 10YR4/2 dark grayish brown; loose; wet from surface; 1.0'/1.0' WSAsb-027-5633-SO and organics throughout. MS/MSD collected from 0.0' -(0.4' - 4.0') SILT (ML); some Clay; trace Sand lenses; 1.0' on 03/23/10 at 1500 for 2.5Y6/6 olive yellow; medium stiff; dry to damp. TAL Metals + Hg, PAHs, and Clay content increases with depth. Explosives. 2 2.65'/3.0' WSAsb-027-5634-SO ML collected from 1.0' - 4.0' on 03/23/10 at 1515 for TAL 3 Metals + Hg, PAHs, and Explosives. 4 (4.0' - 7.4') CLAY (CL); some Silt; trace Gravel, <1/2", subangular; Sand lenses throughout; 2.5Y5/4 light olive brown; stiff; damp; medium plasticity. WSAsb-027-5635-SO 5 collected from 4.0' - 7.0' on 03/24/10 at 1530 for TAL 3.5'/3.0' CL Metals + Hg, PAHs, and Explosives. 6 (6.5' - 7.4') Sand content increases with depth. (7.4' - 7.5') GRAVEL (GC); Sandy Clay matrix; 2.5Y5/4 light olive brown; wet. (7.5' - 10.5') Fine grained SAND and CLAY (SC); little Silt; little 1/2" Gravel; 2.5Y5/4 light olive brown; dense; moist 3.0'/3.0' to wet; low plasticity. 9 SC WSAsb-027-5636-SO collected from 7.0' - 13.0' on 10 03/23/10 at 1545 for TAL Metals + Hg, PAHs, and Explosives. (10.5' - 13.0') Very fine and fine grained SAND (SW); trace fines; trace Gravel, <1/2", subangular; 2.5Y5/4 light

Boring backfilled with sodium bentonite chips and hydrated. 0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP. Samples were composited and homogenized for all analyses.

olive brown; medium dense; dry.

Boring terminated at 13.0 ft bgs.

WSAsb-027

Coordinate System: NAD 83

3.5'/3.0'

LITOW DOLL INC. LOC	DISTRICT			BOREHOLE NUMBER
HTRW DRILLING LOG	USACE	- Louisville		W5ASB-028
1. COMPANY NAME	2. DRILLIN	G SUBCONTRACTOR		
SAIC	Frontz [	-		SHEET 1 OF 2
3. PROJECT RIAAP PBA D8 RT 5. NAME OF DRILLER TO BE BEET				ite 5 Ravenna, OH 44266
7. SIZES AND TYPES OF SAMPLING EQUIPMENT		6. MAKE/MODEL OF DRIL	Geoprobe	1 V620DT
		8. BOREHOLE LOCATION	N-558914.319	5' = 2357007, 93¢8
3" X1' ItAND AVER		5. SOITI ACE ELEVATION	NAD 83	
1.5' XY ACETATE UNDR		1 000162110	STARTED: 1207	COMPLETED: 1320
2" XY DUAL TUBE		15. DEPTH GROUNDWAT 16. DEPTH TO WATER/EL	APSED TIME AFTER BOR	0.3 FT EHOLE COMPLETION
12. OVERBURDEN THICKNESS 3+ FT			NA	
13. DEPTH DRILLED INTO BEDROCK NA		17. OTHER WATER LEVE	L MEASUREMENTS (INLC	LUDE DATE/TIME)
14. TOTAL DEPTH OF BOREHOLE 13 F-7			MA	
18. GEOTECHNICAL SAMPLES UNDISTURBED:	DISTURBE	D:	9. TOTAL NUMBER OF CO	ORE BOXES NA
20. CHEMICAL SAMPLES CHEM: NET / PAH JEYARAD:	NA	OTHER:	21. TOT	AL CORE RECOVERY %
22. DISPOSITION OF BOREHOLE DATE STARTED/INSTALLED: (1)3	23/10/12	M DATE (	COMPLETED/ABANDONED	03/23/10, 1320
BACKFILL TYPE: GROUT 🔽 BENTONITE		PORARY WELL POINT	MONITORING	
23. NOTES BKG: ≤ Background BGS: Below Ground Surface	ce	CPM: Counts per Minut	e PPM: Parts p	per Million
: First Water Encountered : St	tatic Water L		ot Applicable	
LOCATION OVETOUROUND				
LOCATION SKETCH/COMMENTS			SCALE:	None
	some our	DITECT DITECT  SERVICE (CAR		
anda Junto 03/23/10	SIGNATURE	9 4/26/10		WSASG-028





Ravenna Army Ammunition Plant

8451 State Route 5

Ravenna, Ohio 44266

Portage County

## RVAAP-45 Wet Storage Area WSAsb-028

: 235007.9308

Start Date : 03/23/10; 1207 End Date : 03/23/10; 1320 Northing Coord. : 558916.3195

Total Depth of Boring : 13.0'

Easting Coord.

Drilling Company : Frontz Drilling
Driller : Jeremy Leckrone
Designation of Drill : Geoprobe 6620DT
Type of Drill Rig : Direct Push Technology

Geologist : Amanda Trenton
Oversight Company : SAIC

Borehole Diameter : 2"

Sampling Equipment : 1.5" x 4' Long Acetate Liner

: 2" x 4' Dual Tube : 3" Hand Auger

			Fortage County	Total Depth of Boring : 13.0	U			. 3 Tiana Auger
Depth in feet	USCS Symbol	USCS Graphic	Descriptio	n	Analyses	Recovery	Collection Interval	Comments
0- 1- 1- 2- 3-			(0.0' - 0.3') SILT (ML); some Clay; tr 10YR4/2 dark grayish brown; very s suface water; high plasticity; organic (0.3' - 0.7') SILT (ML); some Clay; 5 7.5Y5/8 strong brown; medium stiff; (0.7' - 5.1') SILT and CLAY (ML/CL) brown and 5Y6/2 light olive gray; mediam; low plasticity.	oft; wet from es throughout.  Y5/1 gray, little damp; low plasticity. ; 10YR5/6 yellowish	WSAsb-028-5637-SO collected from 0.0' - 1.0' or 03/23/10 at 1230 for VOCs SVOCs, PCBs, Pesticides Explosives, Propellants, a TAL Metals + Hg.  WSAsb-028-5638-SO collected from 1.0' - 4.0' or 03/23/10 at 1240 for VOCs SVOCs, PCBs, Pesticides Explosives, Propellants, a	s, ,nd 2.7'/3.0' n s,		Soil Color Chart Munsell 2000 Rev. Ed.
5- 5- 7-	ML		(5.1' - 6.1') SILT (ML); 2.5Y5/4 light dense; moist to wet;.  (6.1' - 8.3') SILT (ML); little Gravel a light olive brown; stiff; dry.	·	TAL Metals + Hg.  WSAsb-028-5639-SO collected from 4.0' - 7.0' or 03/23/10 at 1305 for VOC: SVOCs, PCBs, Pesticides Explosives, Propellants, a TAL Metals + Hg.	n s, 3.1'/3.0'		
9-			(8.3' - 10.3') Fine grained SAND and <1/2" Gravel; 10YR5/4 yellowish bro (9.2' - 10.3') Color is 2.5Y4/2 dark g (10.3' - 11.85') SAND (SW); fine to a coarsening downward; 10YR5/4 yellowidum dense; wet; nonplastic.	own; moist to wet. rayish brown.	WSAsb-028-5640-SO collected from 7.0' - 13.0' 03/23/10 at 1318 for VOC: SVOCs, PCBs, Pesticides Explosives, Propellants, a TAL Metals + Hg.	s, ,		
12-	SM		(11.85' - 13.0') Fine grained SAND a 10YR5/4 yellowish brown; medium a Boring terminated at 13.0 ft bgs.			3.5'/3.0'		Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated. 0.0' - 1.0' sampled using a 3" hand auger and triangular subsar

0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP. Samples were composited and homogenized for all analyses except VOCs.

	DISTRICT	-	BOREHOLE NUMBER		
HTRW DRILLING LOG	USACE - Louisville		WSAS13-029		
1. COMPANY NAME	2. DRILLING SUBCONTRACTOR		CHIEFT 4 CT O		
SAIC	Frontz Drilling		SHEET 1 OF Z		
3. PROJECT RUMAP PBA OB RI			5 Ravenna, OH 44266		
NAME OF DRILLER TOREMY LECKRONE	6. MAKE/MODEL OF DRILL	M Geoprobe /	J'A		
SIZES AND TYPES OF SAMPLING EQUIPMENT	8. BOREHOLE LOCATION N	559077-8340'	E-2350862.9269'		
3" x 1' HAND AUGER	9. SURFACE ELEVATION/DA	MID 03			
(),(	10. DRILL PATETIME ST.  15. DEPTH GROUNDWATER	ARTED: (\10)	COMPLETED: 1205		
	16. DEPTH TO WATER/ELAP	IVI T	OLE COMPLETION		
2. OVERBURDEN THICKNESS 77F1		NA			
B. DEPTH DRILLED INTO BEDROCK NA	17. OTHER WATER LEVEL N	MEASUREMENTS (INLCLUD	DE DATE/TIME)		
TOTAL DEPTH OF BOREHOLE		NA			
GEOTECHNICAL SAMPLES UNDISTURBED:	DISTURBED:19	TOTAL NUMBER OF COR	BOXES NA		
CHEMICAL SAMPLES CHEM: TALINET DECLARATED	NA OTHER:	21. TOTAL	CORE RECOVERY %		
DATE STARTED/INSTALLED:	DATE CO	MPLETED/ABANDONED:			
ACKFILL TYPE: ☐ GROUT ☐ BENTONITE	TEMPORARY WELL POINT	MONITORING W			
I. NOTES BKG: ≤ Background BGS: Below Ground Surfa	·	PPM: Parts per	Million		
: First Water Encountered : S	static Water Level NA: Not	Applicable			
OCATION SKETCH/COMMENTS		SCALE:	None		
		Awsasb act			
BEOCOGIST SIGNATURE/DATE A	VOC SIGNATURE/DATE		BOREHOLE NUMBER		





Ravenna Army Ammunition Plant

8451 State Route 5

Ravenna, Ohio 44266

Portage County

## RVAAP-45 Wet Storage Area WSAsb-029

: 2356862.9269

 Start Date
 : 03/24/10; 1110

 End Date
 : 03/24/10; 1205

 Northing Coord.
 : 559097.8346

Total Depth of Boring : 7.0'

Easting Coord.

Drilling Company : Frontz Drilling
Driller : Jeremy Leckro

Driller : Jeremy Leckrone
Designation of Drill : NA
Type of Drill Rig : NA

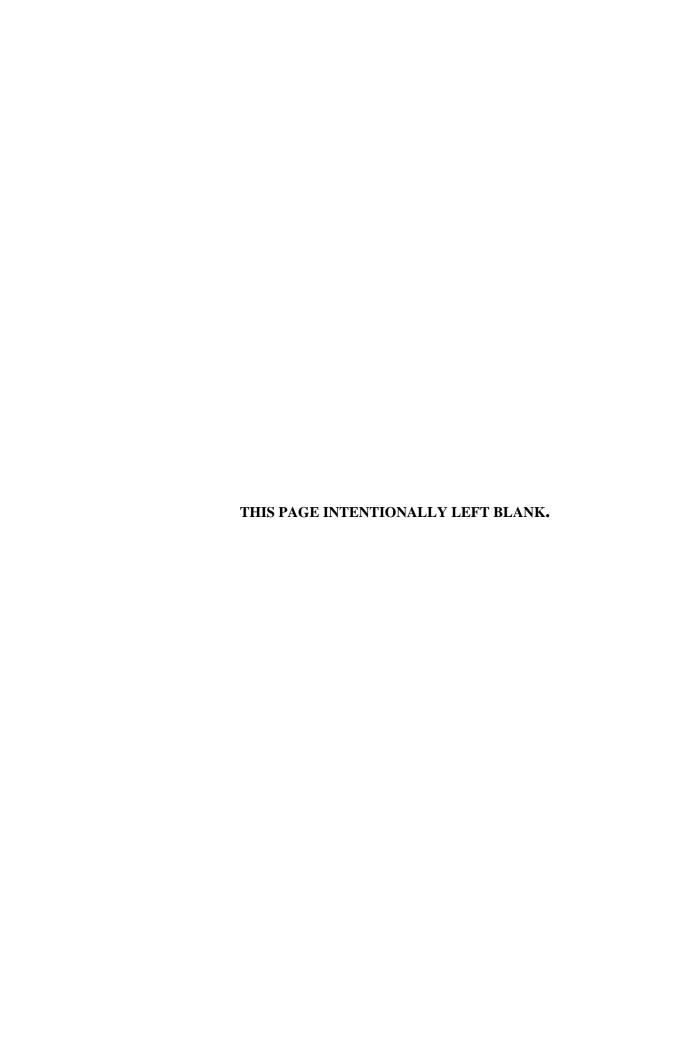
Geologist : Amanda Trenton

Oversight Company : SAIC
Borehole Diameter : 3"

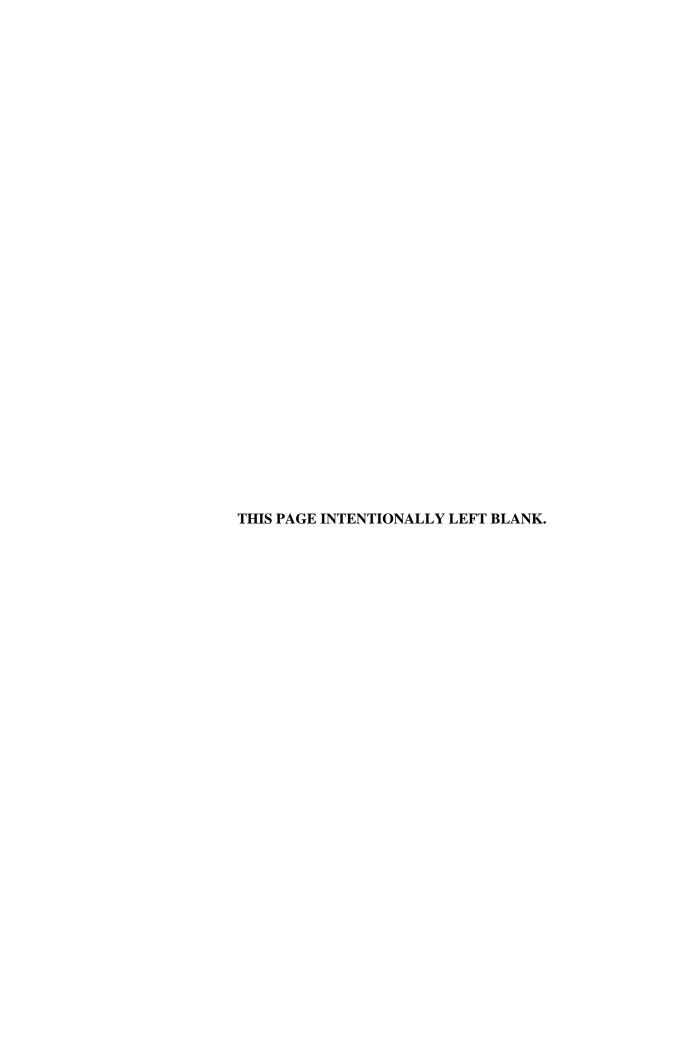
Sampling Equipment : 3" Hand Auger

			1 ortage county	Total Deptil of Bolling . 7.0				_
Depth in feet	USCS Symbol	USCS Graphic	Descriptio	n	Analyses	Recoverv	Collection Interval	Comments
0-	ML		(0.0' - 0.9') SILT (ML); some Sand; Gravel; 10YR5/4 yellowish brown; of dense; low plasticity; little roots/orgations (0.9' - 5.5') Very fine grained SAND trace <1/2" gravel; 10YR5/4 yellowing the second of the second s	damp; soft to medium anics.  (SM); some Silt; sh brown; medium	WSAsb-029-5641-SO collected from 0.0' - 1.0' o 03/24/10 at 1135 for TAL Metals + Hg, PAHs, and Explosives.		.0'	Soil Color Chart Munsell 2000 Rev. Ed.
2-3-3-3-3-3-3-3-3-3-3-3-3-3-3-3-3-3-3-3	SM		dense; damp in pockets. Silt conterdepth.	nt decreases with	WSAsb-029-5642-SO collected from 1.0' - 4.0' c 03/24/10 at 1150 for TAL Metals + Hg, PAHs, and Explosives.	1.5.07.	5.0'	
5- 5-			(5.5' - 7.0') Fine to medium grained 10YR5/3 brown and 10YR6/3 pale dense; dry to damp.	SAND (SW); prown; medium	WSAsb-029-5643-SO collected from 4.0' - 7.0' o 03/24/10 at 1200 for TAL Metals + Hg, PAHs, and Explosives.		5.0'	
-	sw		Boring terminated at 7.0 ft bgs.					Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated. 0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP. Samples were composited and homogenized for all analyses.







From Science to Solutions	USACE - Lo	ouisville	RVAAP	8451 State Rt. 5	1, Sample	Team: SA	A He	SE	
	RVAAP PB	A 2008 RI	_	, OH 44266		H SPKI			
Location ID:				3. Revised Coordina			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
WSA sw/sd-	Ø37			MA	1 55908	11,1723	F 2350	1.16.0	101
Surface Water Sample ID:				5. Date and Time					
WSA SW-03	7-5256	-sw		Ø3/23/I⊅ 7. Split ID (if needed	, 199	06			
Dupe ID (if needed):				/	d) '				
NA				NA					
Surface Water Sample Type  Wet Sediment Sample ID:	and Equipment Us	ed: G-RAB N	O SPECI	IAL EQUI	P.		9. MS	S/MSD:	1/4
WSAS1-037	-5649-	50		から/23/1め 13. Split ID (if needs	, 09	05			
Dupe ID (if needed):				13. Split ID (if needs	ed)				
N/A	a and Eaulament II	lands &		NA			_		
Wet Sediment Sample Type	e and Equipment u	Sed GRAS, P	USH PRO	OBE, TROL	NEL	1.00	15. M	IS/MSD: /	1/1
Weather Conditions 36	OF, SLIGHT	BLEGZE, LIGI	HT RAIN	17. Activities in the	Area; NO	NE			
DCATION SKETCH/C	OMMENTS					SCALE:	None		
7 11 1 1 1	1 1 1	1 - 1 1		10 10 1	1 1		-		
							4		- 4
eld Notes: 5 TRE	M IS CLI	AR. GRAV	elly 13	M MOLLO	SOME	BRANC	HES.	A	4- N
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		Saken		SERIAL N					
	REMENTS	SALET	UNITS			LA #3/2			
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TEMPER	REMENTS RATURE: pH: CTIVITY: DO: RBIDITY:	READING 6.54 7.74 0.186 10.19	UNITS °C S.U mS/cm mg/L	155754				THE PARTY OF THE P	
CONDU- TUI OTHER SURFACE WATER	REMENTS RATURE: pH: CTIVITY: DO: RBIDITY:	READING 6.54 7.74 0.181. 14.19	UNITS °C S.U mS/cm mg/L NTU	1557				THE PROPERTY OF THE PROPERTY O	
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CONDU	REMENTS RATURE: pH: CTIVITY: DO: RBIDITY:	READING 6.54 7.74 0.181. 14.19	UNITS °C S.U mS/cm mg/L NTU	1557 U	R	ф3/2		THE PARTY OF THE P	
CONDU	REMENTS RATURE: pH: CTIVITY: DO: RBIDITY:	READING  6.54  7.74  0.18()  1.49  VOCs, SVOCs, I	UNITS °C S.U mS/cm mg/L NTU  ALS  SV Wetals, Explo	15370 15337 OCs OTHE psives, Propellar	R_nts, Pesticid	ф3/2		THE PARTY OF THE P	
CONDU	REMENTS RATURE: pH: CTIVITY: DO: RBIDITY: EXPLOSIVES FULL SUITE	READING  6.54  7.74  0 186  10.14  TAL MET	UNITS °C S.U mS/cm mg/L NTU  ALS  SV Vetals, Explo	15370  15337  OCs OTHE psives, Propellar	R_esticid	es, PCBs)		THE PARTY OF THE P	
CONDU	REMENTS RATURE: pH: CTIVITY: DO: RBIDITY: EXPLOSIVES FULL SUITE	READING  6.54  7.74  0.18()  1.49  VOCs, SVOCs, I	UNITS °C S.U mS/cm mg/L NTU  ALS  SV Vetals, Explo	15370  15337  OCs OTHE psives, Propellar	R_esticid	es, PCBs)			

Surface Water Sample Type and Equipment Used: DIRECT FOR DIRECT FO	Ravenna	8451 State Rt. 5 a, OH 44266  3. Revised Coordinat  **NORTHLING**  5. Date and Time:  **B3/13//B  7. Split ID (if needed)  **ID 3/23//B  13. Split ID (if needed)  **AASH PLOCE  17. Activities in the A	tes Recorde - · · · · · · · · · · · · · · · · · · ·	ARA HISE  MI:  717.33  I G  SCALE:  CORRNGA	9. MS/MSD  15. MS/MSD  None	5 6584. 0:N/A
Surface Water Sample ID:  W SA SW - D 38 - 5657 - 5W  Dupe ID (If needed):  N/A  Surface Water Sample Type and Equipment Used:  D. Wet Sediment Sample ID:  WSA J - D 38 - 56 5 D - SD  Dupe ID (If needed):  N/A  4. Wet Sediment Sample Type and Equipment Used:  S. Weather Conditions:  HOF, CLWDY, SCATTERE  OCATION SKETCH/COMMENTS  Ield Notes:  WMER B LLEAR,  FAST FLOW I DEFA,  FRAVELLY/FOCKY B5T TOM  WATER BOTTLE STREAM PLOWS:  STAKE  WITH STREAM PLOWS:  STAKE  FIELD MEASUREMENTS  READING	IIC	NORTHLING 5. Date and Time:  03/13//b 7. Split ID (If needed)  N/A  11. Date and Time:  13. Split ID (If needed)  N/A  ASH PLOCE	tes Recorde	TITINE  SCALE:  CORRNGA	9. MS/MSD  15. MS/MSD  None	1. N/A
Dupe ID (if needed):  N/A  Surface Water Sample Type and Equipment Used:  Diffect From the Conditions:  Wet Sediment Sample Type and Equipment Used:  Diffect From the Conditions:  Wet Sediment Sample Type and Equipment Used:  Sediment Sample Type and Equipment Used:  Sediment Sample Type and Equipment Used:  Wet Sediment Sample Type and Equipment Used:  Sediment Sample Type and Equipment Used:  Wet Sediment Sample Type and Equipment Used:  Wet Sediment Sample Type and Equipment Used:  Sediment S	1 strip Pi	11. Date and Time:  12. Split ID (if needed)  13. Split ID (if needed)  14. Split ID (if needed)	) / / / / / / / / / / / / / / / / / / /	OPRIVE	9. MS/MSD  15. MS/MSI  None  ATED META	1. N/A
Dupe ID (if needed):  NA  Surface Water Sample Type and Equipment Used:  DIRECT FO  Wet Sediment Sample ID:  WSA J - 038 - 5050 - 50  2. Dupe ID (if needed):  NA  4. Wet Sediment Sample Type and Equipment Used:  8. Weather Conditions:  407, CLWDY, SATTERE  COCATION SKETCH/COMMENTS  FIELD MEASUREMENTS  FIELD MEASUREMENTS  READING	1 strip Pi	11. Date and Time:  12. Split ID (if needed)  13. Split ID (if needed)  14. Split ID (if needed)	) / / / / / / / / / / / / / / / / / / /	OPRIVE	9. MS/MSD  15. MS/MSI  None  ATED META	1. N/A
Surface Water Sample Type and Equipment Used: DIRECT FOO. Wet Sediment Sample ID:  WSA J- 038 - 57 SD - SD  2. Dupe ID (If needed):  N/A  4. Wet Sediment Sample Type and Equipment Used: \$5 BOWN  6. Weather Conditions: 40%, CLOUDY, SCATTERE  COCATION SKETCH/COMMENTS  Field Notes: WATER 15 CLEAR,  FAST FLOW TO DEEP,  CRANTLLY / ROCKY BOTTOM  LOCATION MOVED TO CAPTURE  BOTH STREAM PLOWS.  STAKE  FIELD MEASUREMENTS READING	1 strip Pi	11. Date and Time:  103/23/14  13. Split ID (if needed	/ / , // <del>/</del> /d)	SCALE:	None None META	D: N/A
Surface Water Sample Type and Equipment Used: DIRECT FOO. Wet Sediment Sample ID:  WSA J- 038 - 57 SD - SD  2. Dupe ID (If needed):  N/A  4. Wet Sediment Sample Type and Equipment Used: \$5 BOWN  6. Weather Conditions: 40%, CLOUDY, SCATTERE  COCATION SKETCH/COMMENTS  Field Notes: WATER 15 CLEAR,  FAST FLOW TO DEEP,  CRANTLLY / ROCKY BOTTOM  LOCATION MOVED TO CAPTURE  BOTH STREAM PLOWS.  STAKE  FIELD MEASUREMENTS READING	1 strip Pi	11. Date and Time:  103/23/14  13. Split ID (if needed	/ / , // <del>/</del> /d)	SCALE:	None None META	D: N/A
Surface Water Sample Type and Equipment Used:  O. Wet Sediment Sample ID:  WSA J - 038 - 5650 - SD  2. Dupe ID (If needed):  M/A  4. Wet Sediment Sample Type and Equipment Used: \$5 8000   6. Weather Conditions: 40% , CLODY, SCATTERE  COCATION SKETCH/COMMENTS  Field Notes: WMFR 15 CLEAR,  FAST FLOW 11 DEFP,  CRANELLY / ROCKY BOTTOM  LUCATION MOVED TO CAPTURE  BOTH STREAM FLOWS.  STAKE  FIELD MEASUREMENTS READING	1 strip Pi	11. Date and Time:  103/23/14  13. Split ID (if needed		SCALE:	None None META	D: N/A
O. Wet Sediment Sample ID:  WSA J- 038 - 5650-50  2. Dupe ID (If needed):  N/A  4. Wet Sediment Sample Type and Equipment Used: \$5 8000  6. Weather Conditions: 400-, CLODY, SCATTERE  OCATION SKETCH/COMMENTS  Field Notes: WATER 15 CLEAR,  FAST FLOW 11 DEFA,  LYATION MOVED TO CAPTURE  BOTH STREAM FLOWS.  STAKE  FIELD MEASUREMENTS READING	1 strip Pi	103/23/14 13. Split ID (if needed 11/A 15H PLOBE		SCALE:	None None META	D: N/A
DUP ID (IT needed):  N/A  4. Wet Sediment Sample Type and Equipment Used: \$5 BOWN  6. Weather Conditions: 40°F, CLOUDY, SCATTERE  OCATION SKETCH/COMMENTS  Field Notes: WATER 15 CLEAR,  FAST FLOW 11 DEFP,  CRAVELLY/FOCKY BOTTOM  LUCATION MOJED TO CAPTURE  BOTH STREAM FLOWS:  STAKE  FIELD MEASUREMENTS READING	1 AMP PR	103/23/14 13. Split ID (if needed 11/A 15H PLOBE		SCALE:	None None META	1
A. Wet Sediment Sample Type and Equipment Used: SS BOWN  6. Weather Conditions: 40°F, CLOUN, SCATTERE  OCATION SKETCH/COMMENTS  Field Notes: WATER B CLEAR,  FAST FLOW, "I DEFA  CRAVELLY/ROCKY BOTTOM LOCATION MOJED TO CAPTURE  BOTH STREAM FLOWS.  STAKE  FIELD MEASUREMENTS READING	1 AMO PA	N/A ASH PLOGE		SCALE:	None None META	1
FIELD MEASUREMENTS  16. Weather Conditions: 40%, CLWDI, SCATTERE  LOCATION SKETCH/COMMENTS  Field Notes: WATER B CLEAR,  FAST FLOW, TI DEEP,  LOCATION MOJED TO CAPTURE  BOTH STREAM FLOWS:  STAKE  FIELD MEASUREMENTS  READING	1 AMO PA	ISH PLOBE	Area A	SCALE:	None None META	1
FIELD MEASUREMENTS  16. Weather Conditions: 40%, CLWDI, SCATTERE  LOCATION SKETCH/COMMENTS  Field Notes: WATER B CLEAR,  FAST FLOW, TI DEEP,  LOCATION MOJED TO CAPTURE  BOTH STREAM FLOWS:  STAKE  FIELD MEASUREMENTS  READING	1 AMP PL	ISH PLOBE	Area A	SCALE:	None None META	1
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TEMPERATURE. / 1/2	UNITS	SERIAL NO	O.	LA	AST CALIB.	
TEMPERATURE: 6.93	°C	15560	b	13/23	3/10	
pH: 8.01	S.U	1		<del></del>	1	
CONDUCTIVITY: 0.166	mS/cm					
	mg/L					
TURBIDITY: 7,79	NTU	1555	7		•	-
-OTHER						
CONDUCTIVITY: 0.166  DO: 10.51  TURBIDITY: 7.79	mS/cm mg/L NTU	VOCs OTHER	R	ides. PCBs)		-

SAIC.	USACE - L	ouisville	RVAAP	3451 State Rt. 5	1. Sample Team:	EICH SPRIN	2C 3h 1
From Science to Solutions	RVAAP PB	A 2008 RI		, OH 44266	1	PA HOFE, R	
ocation ID:				3. Revised Coordina		-,	2 1 70 amily 1
WSASUBW -	<b>\$39</b>			NOHE 5. Date and Time:			
VSAsw - 039 Dupe ID (if needed):	<u>1-5658-</u>	SW		93/23 // 5 7. Split ID (If needed	,1504		
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NA Water Samula Trans	and Environt Li	andi S. dat. in . d		NA			- 4
Surface Water Sample Type Wet Sediment Sample ID	and Equipment O	DIRECT F1	u	11. Date and Time:		9. MS/MS	id: NA
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NSA sd -d39. Dupe ID (if needed):	1001 31	<u>,                                      </u>		<i>ゆ3/23/ル</i> 13. Split tD (if neede	d)	<u> </u>	
NA				NA			
. Wet Sediment Sample Typ	e and Equipment t	Ised: SS BOWL	Ano Pi	ISHPROPE.		15. MS/M	ISD: NA
Weather Conditions: 4	IPF. CLO			17. Activities in the A	rea: NONE		
OCATION SKETCH/C	OMMENTS				SCALE	: None	
CATION ONE TORK	OHIMEIA I O				SCALE	19018	
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eld Notes: FAST F	LOW, RX	KY BUTTON	1, CLEX	R R	A		13
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FIELD MEASU	REMENTS	READING	UNITS	SERIAL N	0	LAST CALIB.	-
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TU	IRBIDITY:	1 / '					
OTHER		1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		1337			
OTHER SURFACE WATER ANALYSES:	DO:  IRBIDITY:  EXPLOSIVE:  FULL SUITE		mS/cm mg/L NTU ALS SV Metals, Explo	osives, Propellan	ts, Pesticides, PCB		

From Science to Solutions  2. Location ID:  WSASW - 946  4. Surface Water Sample ID:  WSASW - 946  6. Dupe ID (if needed):  WSASW - 946  8. Surface Water Sample Type and  10. Wet Sediment Sample ID:  WSASW - 946  12. Dupe ID (if needed):	46			8451 State Rt. 5 a, OH 44266	1. Sample Te	KICI	Sprinz	,	
2. Location ID:  WSASW - \$4.  4. Surface Water Sample ID:  WSASW - \$4.  6. Dupe ID (if needed):  WSASW - \$4.  8. Surface Water Sample Type and  10. Wet Sediment Sample ID:  WSASW - \$4.  12. Dupe ID (if needed):	(\$ 4.6	A 2008 RI					Spring		
WSASW - \$4.  4. Surface Water Sample ID:  WSASW - \$4.  6. Dupe ID (if needed):  WSASW - \$4.  8. Surface Water Sample Type and  10. Wet Sediment Sample ID:  WSASW - \$4.  12. Dupe ID (if needed):	46		i i			-	$\mathcal{L}'$		
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