



Appendix A

Soil Boring Logs/Field Forms

Landfill North of Winklepeck Burning Grounds
Anchor Test Area

Field Sampling Report

Location ID: LNWSb-053-50

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 11-09-04

Sampling Information

Source	Groundwater / Product	Surface Water	Soils / Sediments / Sludge		
Method	Bailer	Sample Bottle	Scoop		Trowel
	Pump	Bacon Bomb	Bowl		Hand Auger
			Push Probe		Plastic Liner
Type/Construction			Mattocks		Geo Probe X
Miscellaneous	Well Purging Form Yes - No				

Sample Collection: 1200 hrs Sample Type: Composite - MI - Grab Location: Plotted on Map - Staked in Field
 If MI # of increments taken: _____ Estimated - Measured - Surveyed
 Sample Depth: 2-4 FT (below surface) Decon: Dedicated - Each Day - Each Location

Field Parameters (at time of sample)	Analytical Parameters			Other Parameters		
PID / FID Readings: Background: <u>0.0</u> ppm <u>4.9</u>	VOC		TPH GRO	Corrosivity		
	SVOC	✓	TPH DRO	Reactivity Sulfide/Cyanide		
	Explosives	✓	Chromium +6	Ignitability		
Sample: _____ ppm	Propellants		Nitrate			
Water Level _____ FT	TAL Metals	✓		QA Samples		
Temperature _____ °C	Pesticides/PCBs			MS/MSD	Yes / No	NA
Sp. Conductance: _____ uMHOs	Cyanides			Duplicate ID		NA
pH _____ units	TOC			Equipment Rinse ID		NA
Turbidity _____ N.T.U.	Grain Size			Trip Blank ID		NA

Sample Description

no odor, some grey staining
10YR 3/4 silty clay cl
(clay 80%, silt 15%, sand 5%)
non plastic, sorted, moist

Split Sample

Split Sample ID: _____
 Name: _____
 Agency/Company: _____
 Address: _____

QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
Parameters: Same as Above - As Listed

Soil sample description should include:

Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:

Color Odor Sheen Turbidity

Logged By: Shalman (Please Print)

Reviewed by: FRIG ELLIS (Please Print)

Signature: [Signature]

Signature: [Signature] Date: 2/1/05

HTRW DRILLING LOG		DISTRICT		HOLE NUMBER	
1. COMPANY NAME <i>MKM</i>		2. DRILL SUBCONTRACTOR <i>AST</i>		LNWsb-053	
3. PROJECT <i>RVAAP 14</i>		4. LOCATION <i>Land fill</i>			
5. NAME OF DRILLER <i>Ted Keen</i>		6. MANUFACTURERS DESIGNATION OF DRILL <i>54 LT</i>			
7. SIZE AND TYPE OF (DRILLING) AND SAMPLING EQUIPMENT		8. HOLE LOCATION			
		9. SURFACE ELEVATION			
		10. DATE STARTED <i>11-09-04</i>		11. DATE COMPLETED <i>11-09-04</i>	
12. OVERBURDEN THICKNESS		13. DEPTH GROUNDWATER ENCOUNTERED			
13. DEPTH (DILLED) INTO ROCK		14. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
14. TOTAL DEPTH OF HOLE <i>10'</i>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
18. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED	
				<input checked="" type="checkbox"/>	
19. TOTAL NUMBER OF CORE BOXES					
20. SAMPLES FOR CHEMICAL ANALYSIS		S.VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)
		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<i>Explosives</i>	
21. DISPOSITION OF HOLE		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	22. TOTAL CORE RECOVERY %
		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
		23. SIGNATURE OF INSPECTOR <i>Phabne</i>			
LOCATION SKETCH/COMMENTS					
SCALE:					
PROJECT <i>RVAAP 14</i>				HOLE NO. <i>LNW SB-053</i>	

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER
LNWsb-053

PROJECT RVAAP 14

INSPECTOR Shahram Taherinia

SHEET 1 OF 1 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0.0	Top soil	2.8			1.8'	
	1	0.2 10YR 3/3 silty clay with fine sand cl silt 20% clay 70% sand 10%					
	2	10YR 3/4 clay 80% silt 15% sand 5%	4.3		*	2.0'	
	3						
	4	10YR 3/4 CL	3.9			2.0'	Grey staining
	5	silty clay with some grey staining silt: 15% clay: 85% sand: 5%					
	6	10YR 3/3 CL	3.8			2.0'	Grey staining
	7	silty clay silt: 10% clay: 80% sand: 10% Some grey staining					
	8		2.6				
	8.8'	SC					
	9	10YR 3/3 clay: 70% sandy clay sand 30%				2.0	
	9.2'	10YR 3/3 CL silt: 20% sand: 5% clay 75%				2.0	
	10						

PROJECT RVAAP 14

TD = 10'

HOLE NO. LNWsb-053

Field Sampling Report

Location ID: LNWSB-054-S0

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 11-09-04

Sampling Information

Source	Groundwater / Product	Surface Water	Soils Sediments / Sludge	
Method	Bailer	Sample Bottle	Scoop	Trowel
	Pump	Bacon Bomb	Bowl	Hand Auger
			Push Probe	Plastic Liner
Type/Construction			Mattocks	Bed Probe <input checked="" type="checkbox"/>
Miscellaneous	Well Purging Form Yes - No			

Sample Collection: 1220 hrs Sample Type: Composite - MI - Grab Location: Plotted on Map Staked in Field
 If MI, # of increments taken: _____ Estimated - Measured - Surveyed
 Sample Depth: 2-4 FT (below surface) Decon: Dedicated Each Day - Each Location

Field Parameters (at time of sample)	Analytical Parameters			Other Parameters		
PID / FID Readings: Background: <u>0.0</u> ppm	VOC	✓ ^{SF}	TPH GRO	Corrosivity	Reactivity Sulfide/Cyanide	Ignitability
	<u>SVOC</u>	✓	TPH DRO			
	<u>Explosives</u>	✓	Chromium +6			
Sample: <u>0.0</u> ppm	Propellants		Nitrate			
Water Level	FT	<u>TAL Metals</u>	✓	QA Samples		
Temperature	°C	Pesticides/PCBs		MS/MSD	Yes / No	NA
Sp. Conductance:	µMHOs	Cyanides		Duplicate ID		NA
pH	units	TOC		Equipment Rinse ID		NA
Turbidity	N.T.U.	Grain Size		Trip Blank ID		NA

Sample Description

7.5 YR 4/16
no odor, Fe stain
moist, sorted non plastic
silty clay
silt: 35%
clay: 60%
sand 5%

Split Sample

Split Sample ID: _____
 Name: _____
 Agency/Company: _____
 Address: _____

 QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
 Parameters: Same as Above - As Listed

Soil sample description should include:
 Munsell Color Odor Staining Texture Sorting Plasticity Moisture

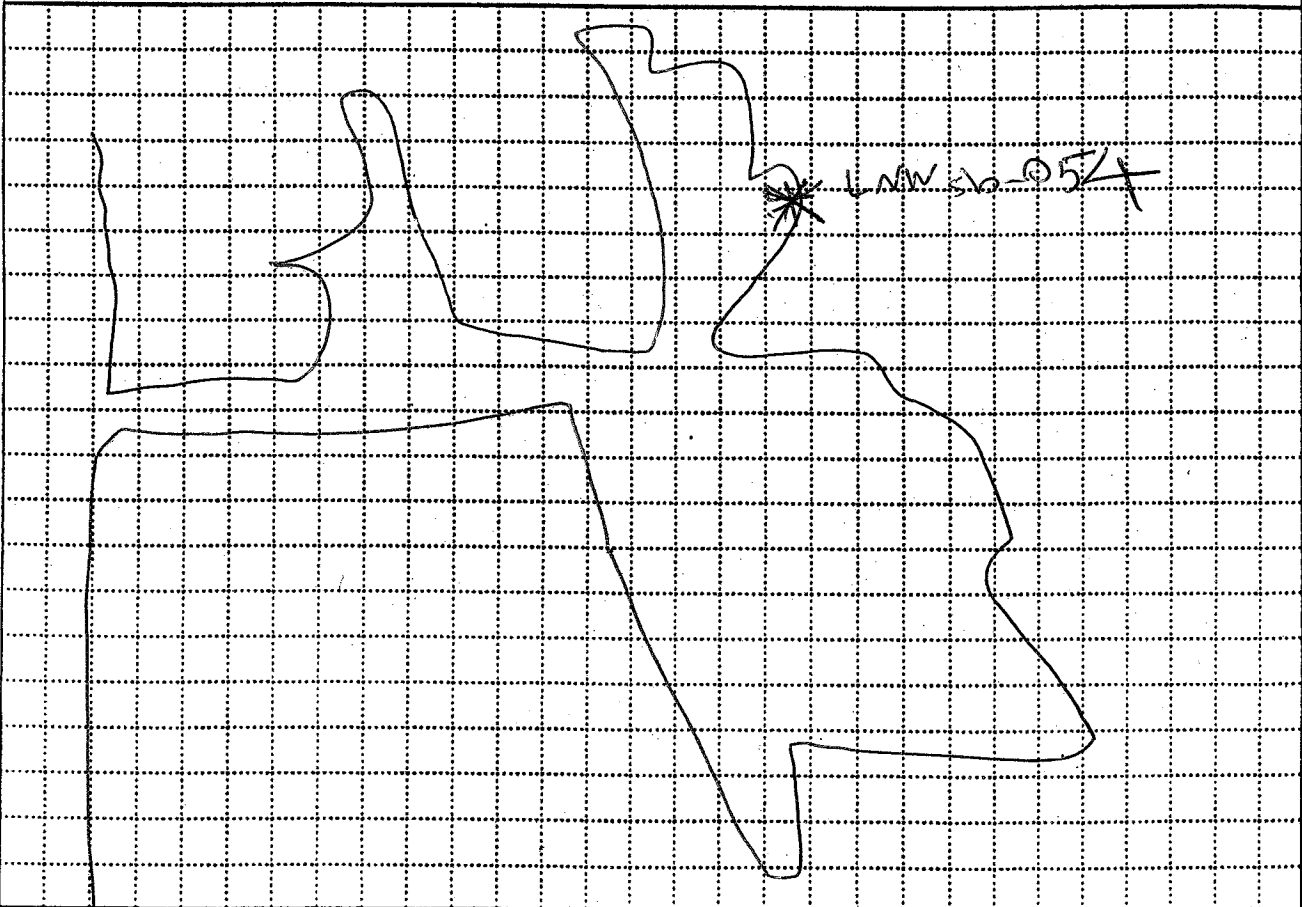
Water sample description should include:
 Color Odor Sheen Turbidity

Logged By: [Signature] (Please Print) Reviewed by: ERIC EWIS (Please Print)
 Signature: [Signature] Date: 2/1/05

HTRW DRILLING LOG		DISTRICT		HOLE NUMBER LWWSb-054	
1. COMPANY NAME MKN		2. DRILL SUBCONTRACTOR AST		SHEET SHEETS 1 OF 1	
3. PROJECT RVAAP 14			4. LOCATION Landfill		
5. NAME OF DRILLER Ted Keen			6. MANUFACTURERS DESIGNATION OF DRILL 54 LT		
7. SIZE AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION			
		9. SURFACE ELEVATION			
		10. DATE STARTED 11-09-04		11. DATE COMPLETED 11-09-04	
12. OVERBURDEN THICKNESS		13. DEPTH GROUNDWATER ENCOUNTERED			
13. DEPTH DRILLED INTO ROCK		14. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
14. TOTAL DEPTH OF HOLE 10'		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
18. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED	
				19. TOTAL NUMBER OF CORE BOXES	
20. SAMPLES FOR CHEMICAL ANALYSIS		S VOC		METALS	
		✓		OTHER (SPECIFY) Explosives	
22. DISPOSITION OF HOLE		BACKFILLED		MONITORING WELL	
		✓		OTHER (SPECIFY)	
		23. SIGNATURE OF INSPECTOR <i>[Signature]</i>			

LOCATION SKETCH/COMMENTS

SCALE:



PROJECT RVAAP 14	HOLE NO. LWWSb-054
---------------------	-----------------------

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

LWWSb-054

PROJECT

RVAAP 14

INSPECTOR

Shahram Taherinia

SHEET

SHEETS

1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	BLOW-COUNT-RECOVERY (G)	REMARKS (H)
	0.0	Topsoil 7.5YR 3/1 silty clay	0.0			1.3	
	1	7.5YR 4/6 clay 60% silt 35% sand 5%					FeO ₂ stain #.8'
	2	silty clay Reddish stain	0.0			2.0	
	3						
	4	10YR 3/3 clay 70% silt 25% silty clay	0.0			2.0	
	5						
	6		0.0			2.0	
	7	10YR 3/4 clay 60% silt 35% sand 5% silty clay	0.0			2.0	
	8						
	9						
	10						

PROJECT

RVAAP 14

TD = 10'

HOLE NO.

LWWSb-054

1230 LWWSb-054-50

Field Sampling Report

Location ID: LNWSB-055-50

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 11-09-04

Sampling Information

Source	Groundwater / Product	Surface Water	Soils / Sediments / Sludge	
Method	Bailer	Sample Bottle	Scoop	Trowel
	Pump	Bacon Bomb	Bowl	Hand Auger
			Push Probe	Plastic Liner
Type/Construction			Mattocks	Geoprobe X
Miscellaneous	Well Purgings Form Yes - No			

Sample Collection: 1330 hrs Sample Type: Composite - MI - Grab Location: Plotted on Map - Staked in Field
 If MI # of increments taken: _____ Estimated - Measured - Surveyed
 Sample Depth: 24 FT (below surface) Decon: Dedicated - Each Day - Each Location

Field Parameters (at time of sample)	Analytical Parameters			Other Parameters		
PID / FID Readings: Background: _____ ppm	VOC		TPH GRO	Corrosivity		
	SVOC	✓	TPH DRO	Reactivity Sulfide/Cyanide		
	Explosives	✓	Chromium +6	Ignitability		
Sample: <u>2.1</u> <u>0.0</u> ppm	Propellants		Nitrate			
Water Level _____ FT	TAL Metals	✓		QA Samples		
Temperature _____ °C	Pesticides/PCBs			MS/MSD	Yes / No	NA
Sp. Conductance: _____ uMHOs	Cyanides			Duplicate ID		NA
pH _____ units	TOC			Equipment Rinse ID		NA
Turbidity _____ N.T.U.	Grain Size			Trip Blank ID		NA

Sample Description

10YR 4/6
Clay 60%, silt 35%, sand 5%
no odor, some red stain
moist, non plastic silty clay

Split Sample

Split Sample ID: _____
 Name: _____
 Agency/Company: _____
 Address: _____

 QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
 Parameters: Same as Above - As Listed

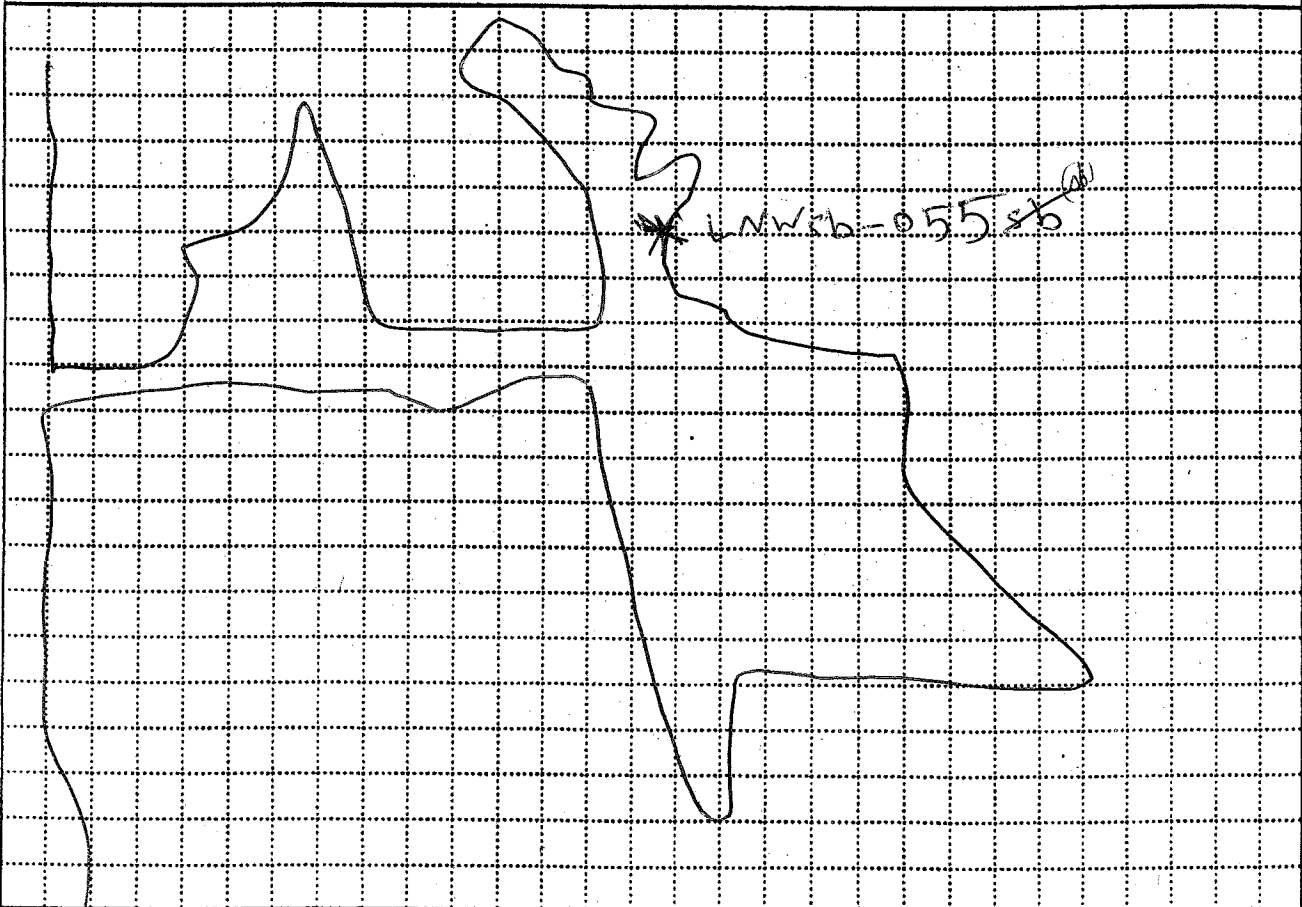
Soil sample description should include:
 Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:
 Color Odor Sheen Turbidity

Logged By: Shelton (Please Print) Reviewed by: ERIC EWS (Please Print)
 Signature: _____ Signature: EL SH Date: 2/1/05

HTRW DRILLING LOG		DISTRICT		HOLE NUMBER LNWsb-055	
1. COMPANY NAME Mkm		1. DRILL SUBCONTRACTOR AST		SHEET SHEETS 1 OF 1	
2. PROJECT RVAAP 14			4. LOCATION		
3. NAME OF DRILLER Ted Keen			6. MANUFACTURERS DESIGNATION OF DRILL Landfill		
7. SIZE AND TYPE OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION 54 LT			
		9. SURFACE ELEVATION			
		10. DATE STARTED 11-09-04		11. DATE COMPLETED 11-09-04	
12. OVERBURDEN THICKNESS		13. DEPTH GROUNDWATER ENCOUNTERED			
13. DEPTH DRILLED INTO ROCK		14. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
14. TOTAL DEPTH OF HOLE 10'		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
18. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED	
19. TOTAL NUMBER OF CORE BOXES					
20. SAMPLES FOR CHEMICAL ANALYSIS		S VOC		METALS	
		OTHER (SPECIFY)		OTHER (SPECIFY)	
		OTHER (SPECIFY)		OTHER (SPECIFY)	
21. TOTAL CORE RECOVERY %		22. DISPOSITION OF HOLE		23. SIGNATURE OF INSPECTOR	
		BACKFILLED		MONITORING WELL	
		OTHER (SPECIFY)		OTHER (SPECIFY)	
				Explosives	
				Signature	

LOCATION SKETCH/COMMENTS SCALE:



PROJECT RVAAP 14	HOLE NO. LNWsb-055
---------------------	-----------------------

HTRW DRILLING LOG (CONTINUATION SHEET)							HOLE NUMBER LNWSb-055
PROJECT RVAPP 14			INSPECTOR Shahram Taherinia			SHEET SHEETS 1 OF 1	
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	BLOW-COUNT Retainer (G)	REMARKS (H)
	0.0	10YR 3/3 top soil. clay 80% silt 20% silty clay	1.8			2.0	
	1	10YR 4/6 clay 80% Ch					FeO ₂ stain 0.5'
	2	silt 20% silty clay with reddish grey staining	1.9			2.0	
	3						FeO ₂ stain 3.1'
	4	10YR 4/6 clay 60% Ch	2.1		*	2.0	
	5	silt 35% sand 5% silty clay stiff					
	6		1.9			2.0	
	7	10YR 3/3 ML silt 60% clay 35% silty clay	2.1				
	8	sand 5% with some some reddish gravel	1.5			2.0	FeO ₂ stain 7.0' gravels
	9	10YR 4/4 Ch clay 60% silt 25% sand 15% silty clay					
	10						

PROJECT RVAPP 14 TD=10' HOLE NO. LNWSb-055

1330 LNWSb-055-sb 4'-6'

Field Sampling Report

Location ID: LNNsb-056-80

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 11-09-04

Sampling Information

Source	Groundwater / Product	Surface Water	Soils / Sediments / Sludge	
Method	Bailer	Sample Bottle	Scoop	Trowel
	Pump	Bacon Bomb	Bowl	Hand Auger
			Push Probe	Plastic Liner
Type/Construction			Mattocks	Geoprobe <input checked="" type="checkbox"/>
Miscellaneous	Well Purging Form Yes - No			

Sample Collection: 1400 hrs Sample Type: Composite - MI - Grab
 If MI # of increments taken: _____ Location: Plotted on Map, Staked in Field
 Sample Depth: 4-6 FT (below surface) Decon: Dedicated Each Day - Each Location
 Estimated - Measured - Surveyed

Field Parameters (at time of sample)	Analytical Parameters			Other Parameters	
PID / FID Readings: Background: <u>10.0</u> ppm	VOC		TPH GRO	Corrosivity	
	SVOC	<input checked="" type="checkbox"/>	TPH DRO	Reactivity Sulfide/Cyanide	
	Explosives	<input checked="" type="checkbox"/>	Chromium +6	Ignitability	
Sample: <u>1.8</u> ppm	Propellants		Nitrate		
Water Level: _____ FT	TAL Metals	<input checked="" type="checkbox"/>		QA Samples	
Temperature: _____ °C	Pesticides/PCBs			MS/MSD	Yes / No <u>NA</u>
Sp. Conductance: _____ uMHOs	Cyanides			Duplicate ID	<u>LNNsb-056-DUP</u> NA
pH: _____ units	TOC			Equipment Rinse ID	<u>NA</u>
Turbidity: _____ N.T.U.	Grain Size			Trip Blank ID	<u>NA</u>

Sample Description

10 MAR 4/8
silt 60%, clay 40%
moist, non plastic, no odor
no stain

Split Sample
 Split Sample ID: LNNsb-056-80
 Name: John Jeff (CELESTED-BA)
 Agency/Company: USACE - LOUISVILLE
 Address: 600 DR MARTIN LUTHER KING JR PLAZA
LOUISVILLE, KY 40202

QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
 Parameters: Same as Above - As Listed

Soil sample description should include:

Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:

Color Odor Sheen Turbidity

Logged By: [Signature] (Please Print)

Reviewed by: ERIC FUS (Please Print)

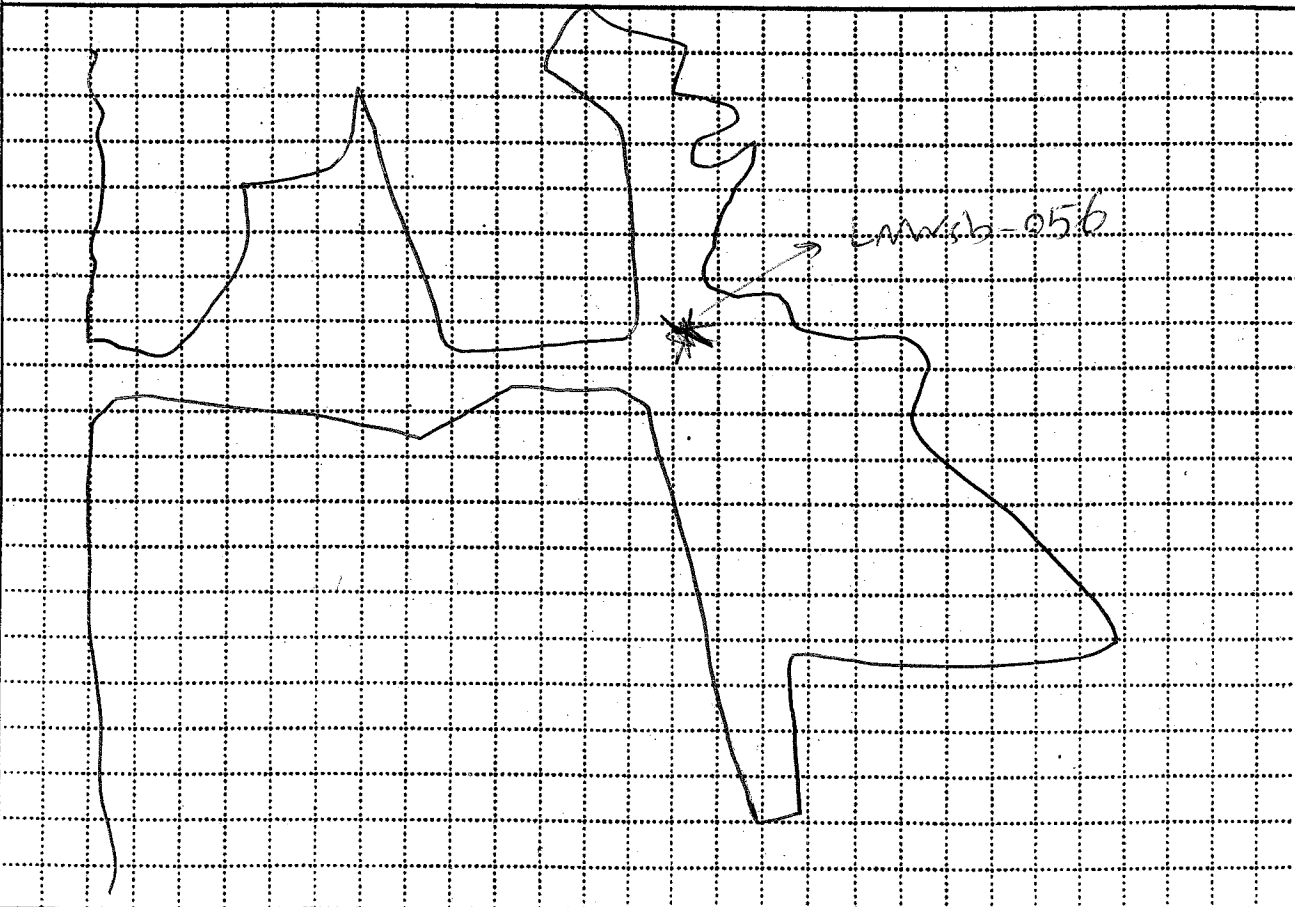
Signature: [Signature]

Signature: [Signature] Date: 11/1/05

HTRW DRILLING LOG		DISTRICT		HOLE NUMBER bNWsb-056	
1. COMPANY NAME MEM		2. DRILL SUBCONTRACTOR AST		SHEET SHEETS 1 OF 1	
3. PROJECT RVAAP 14		4. LOCATION Landfill			
5. NAME OF DRILLER Ted Keen		6. MANUFACTURERS DESIGNATION OF DRILL 54 LT			
7. SIZE AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION			
		9. SURFACE ELEVATION			
		10. DATE STARTED 11-09-04		11. DATE COMPLETED 11-09-04	
12. OVERBURDEN THICKNESS		13. DEPTH GROUNDWATER ENCOUNTERED			
13. DEPTH DRILLED INTO ROCK		14. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
14. TOTAL DEPTH OF HOLE 12'		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
18. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED	
19. SAMPLES FOR CHEMICAL ANALYSIS		S VOC		METALS	
		✓		✓	
22. DISPOSITION OF HOLE		BACKFILLED		MONITORING WELL	
		✓		✓	
				OTHER (SPECIFY) Explosives	
				23. SIGNATURE OF INSPECTOR <i>[Signature]</i>	

LOCATION SKETCH/COMMENTS

SCALE:



PROJECT
RVAAP 14

HOLE NO.
bNW sb-056

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER
LWSb-56
SHEET 1 OF 2 SHEETS

PROJECT RVAAP 14

INSPECTOR Shohram Taherina

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEO TECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	BLOW COUNT (G)	REMARKS (H)
	0.0	7.5 YR 3/3 topsoil ML silt with some clay	1.3			1.8	
	1	10 YR 4/6 silty clay w some sand clay 65% silt 30% sand 5% stiff CL					FeO ₂ stain 1.5'
	2		1.7			2.0	
	3						
	4	10 YR 4/4 clay 40% silt 60% silty clay stiff CL	1.8		*	2.0	
	5						
	6	10 YR 3/6 clay 40% ML silt 50% sand 10%	1.2			2.0	
	7	10 YR 3/6 wet (saturated) silt 70% clay 30% ML					
	8		0.5			2.0	
	9	10 YR 4/4 silt 70% clay 30%					
	10	weathered bed rock					

PROJECT RVAAP 14 TD = 10'

HOLE NO. LWSb-056

1400 LWSb-056-SD 4-6'

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER
LW 56-056
SHEET 2 OF 2

PROJECT RVAAP 14

INSPECTOR Shahram Taherinia

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	12	2.5YR 4/1 med stiff to stiff clay 80% sand 10% silt 5%					Stopped at 12'

PROJECT RVAAP 14

TIP = 12'

HOLE NO. LW 56-056

Field Sampling Report

Location ID: LNW 36-057-50

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 11-09-04

Sampling Information

Source	Groundwater / Product	Surface Water	Soils / Sediments / Sludge		
Method	Bailer	Sample Bottle	Scoop		Trowel
	Pump	Bacon Bomb	Bowl		Hand Auger
Type/Construction			Push Probe		Plastic Liner
Miscellaneous	Well Purging Form Yes - No		Mattocks		Composite <input checked="" type="checkbox"/>

Sample Collection: 150 hrs

Sample Type: Composite - MI - Grab
If MI, # of increments taken: _____

Location: Plotted on Map - Staked in Field
Estimated - Measured - Surveyed

Sample Depth: 4-6 FT (below surface)

Decon: Dedicated - Each Day - Each Location

Field Parameters (at time of sample)	Analytical Parameters	Other Parameters		
PID / FID Readings: Background: → <u>0.0</u> ppm	VOC		TPH GRO	Corrosivity
	SVOC	<input checked="" type="checkbox"/>	TPH DRO	Reactivity Sulfide/Cyanide
	Explosives	<input checked="" type="checkbox"/>	Chromium +6	Ignitability
Sample: → <u>1.07</u> ppm	Propellants		Nitrate	
Water Level	TAL Metals	<input checked="" type="checkbox"/>		QA Samples
Temperature	Pesticides/PCBs			MS/MSD
Sp. Conductance:	Cyanides			Yes / No
pH	TOC			Duplicate ID
Turbidity	Grain Size			Equipment Rinse ID
				Trip Blank ID

Sample Description

104R 4/6, no odor, no staining
well sorted, low particing, moist
s.H 60%, clay 30%, sand 10%

Split Sample

Split Sample ID: _____
Name: _____
Agency/Company: _____
Address: _____

QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
Parameters: Same as Above - As Listed

Soil sample description should include:

Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:

Color Odor Sheen Turbidity

Logged By: Shahram (Please Print)

Reviewed by: ERIC ELUS (Please Print)

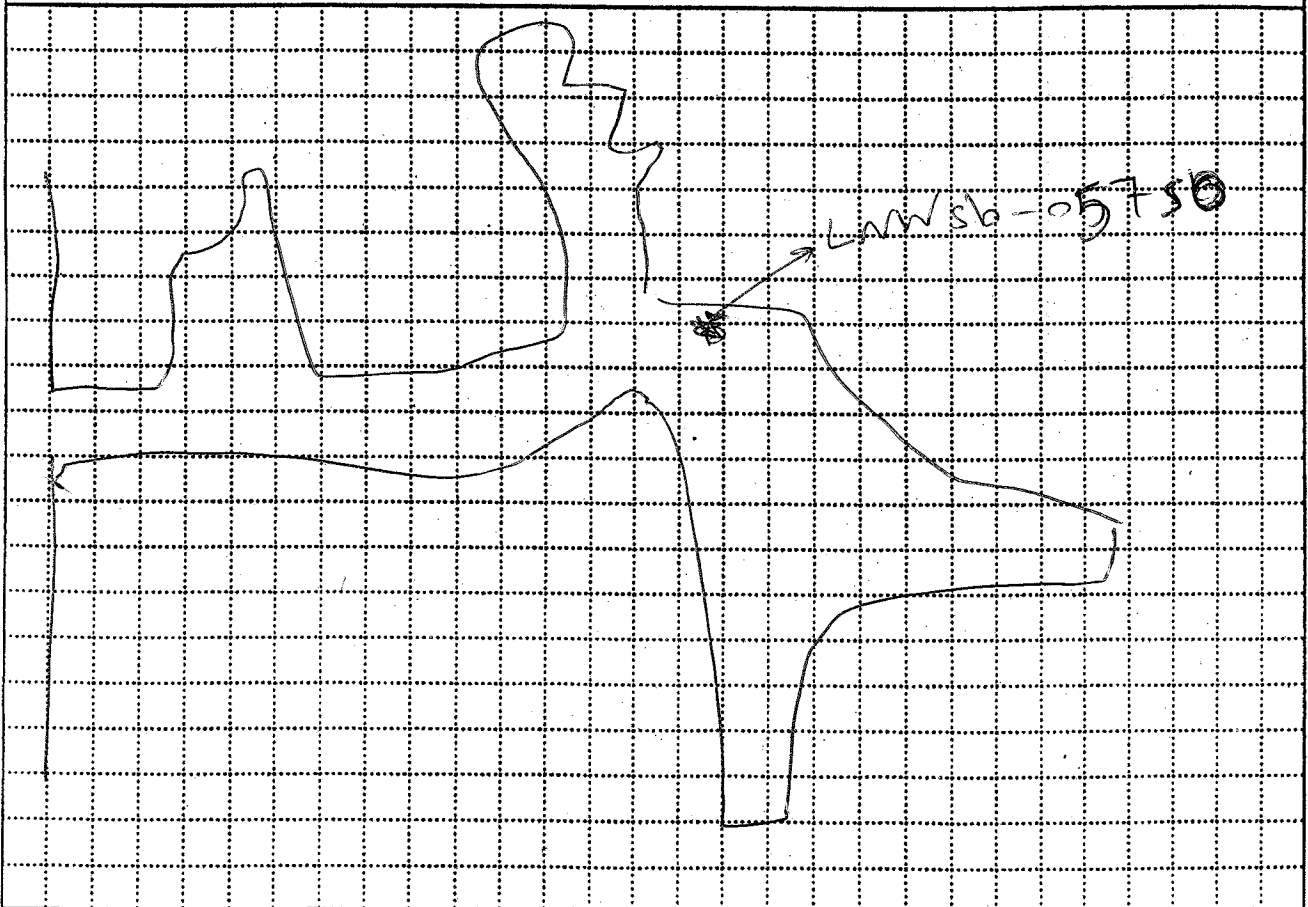
Signature: [Signature]

Signature: [Signature] Date: 2/1/05

HTRW DRILLING LOG		DISTRICT		HOLE NUMBER LNWSB-057	
1. COMPANY NAME MEM		2. DRILL SUBCONTRACTOR AST		SHEET SHEETS OF	
3. PROJECT RVAAP 14			4. LOCATION land fill		
5. NAME OF DRILLER Ted Keen			6. MANUFACTURERS DESIGNATION OF DRILL 54 LT		
7. SIZE AND TYPE OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION		9. SURFACE ELEVATION	
		10. DATE STARTED 11-09-04		11. DATE COMPLETED 11-09-04	
12. OVERBURDEN THICKNESS		13. DEPTH GROUNDWATER ENCOUNTERED			
13. DEPTH DRILLED INTO ROCK		14. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
14. TOTAL DEPTH OF HOLE 10'		15. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
16. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED	
				17. TOTAL NUMBER OF CORE BOXES	
18. SAMPLES FOR CHEMICAL ANALYSIS		S VOC		METALS	
		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
				OTHER (SPECIFY) Explosives	
19. DISPOSITION OF HOLE		BACKFILLED		MONITORING WELL	
		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
				OTHER (SPECIFY)	
				20. SIGNATURE OF INSPECTOR <i>[Signature]</i>	
				21. TOTAL CORE RECOVERY	

LOCATION SKETCH/COMMENTS

SCALE:



PROJECT RVAAP 14	HOLE NO. LNWSB-057
----------------------------	------------------------------

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER
LNWsb-057
SHEET 1 OF 1

PROJECT R VAAP 14

INSPECTOR Shahram Taheri

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	BLOW COUNT (G)	REMARKS (H)
	0	10YR 3/1 ML silt 80%, clay 15%, sand 5%	1.2			1.8	
	1	10YR 4/6 ML silt 60%, clay 35%, sand 5%					
	2	Some gravel	1.3			2.0	
	3						
	4		1.7		*	2.0	
	5	10YR 4/4 ML 60% silt 30% sand					
	6	10% clay	1.4			2.0	
	7	10YR 4/4 ML 30% silt 20% clay wet					
	8	10YR 4/6 ML silt 80%, clay 20%	1.2			2.0	
	9	STIP- 10YR 3/4 ML silt 80%, clay 15%, sand 5%					
	10						

PROJECT R VAAP 14

TD = 10'

HOLE NO. LNW sb-057

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

15.00

LNW sb - 057 sb

4-6'

Field Sampling Report

Location ID: LMVsb-058-50

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 11-09-04

Sampling Information

Source	Groundwater / Product	Surface Water	<u>Soils</u> / Sediments / Sludge		
Method	Bailer	Sample Bottle	Scoop		Trowel
	Pump	Bacon Bomb	Bowl		Hand Auger
			Push Probe		Plastic Liner
Type/Construction			Mattocks		Geoprobe X
Miscellaneous	Well Purging Form Yes - No				

Sample Collection: 1530 hrs Sample Type: Composite - MI - Grab Location: Plotted on Map - Staked in Field
 If MI, # of increments taken: _____ Estimated - Measured - Surveyed
 Sample Depth: 4-6 FT (below surface) Decon: Dedicated - Each Day - Each Location

Field Parameters (at time of sample)	Analytical Parameters	Other Parameters		
PID / FID Readings: Background: <u>0.0</u> ppm <u>1.7</u>	VOC	/		
	SVOC		TPH GRO	
	Explosives		TPH DRO	
Sample: _____ ppm	Propellants	Chromium +6		
Water Level _____ FT	TAL Metals	Nitrate		
Temperature _____ °C	Pesticides/PCBs	QA Samples		
Sp. Conductance: _____ uMHOs	Cyanides	MS/MSD	Yes / No	NA
pH _____ units	TOC	Duplicate ID		NA
Turbidity _____ N.T.U.	Grain Size	Equipment Rinse ID		NA
		Trip Blank ID		NA

Sample Description

10yr 3/4 no odor no staining
moist, non plastic, sorted
5-10% clay 10% with some
sand

Split Sample

Split Sample ID: _____
 Name: _____
 Agency/Company: _____
 Address: _____

QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
 Parameters: Same as Above - As Listed

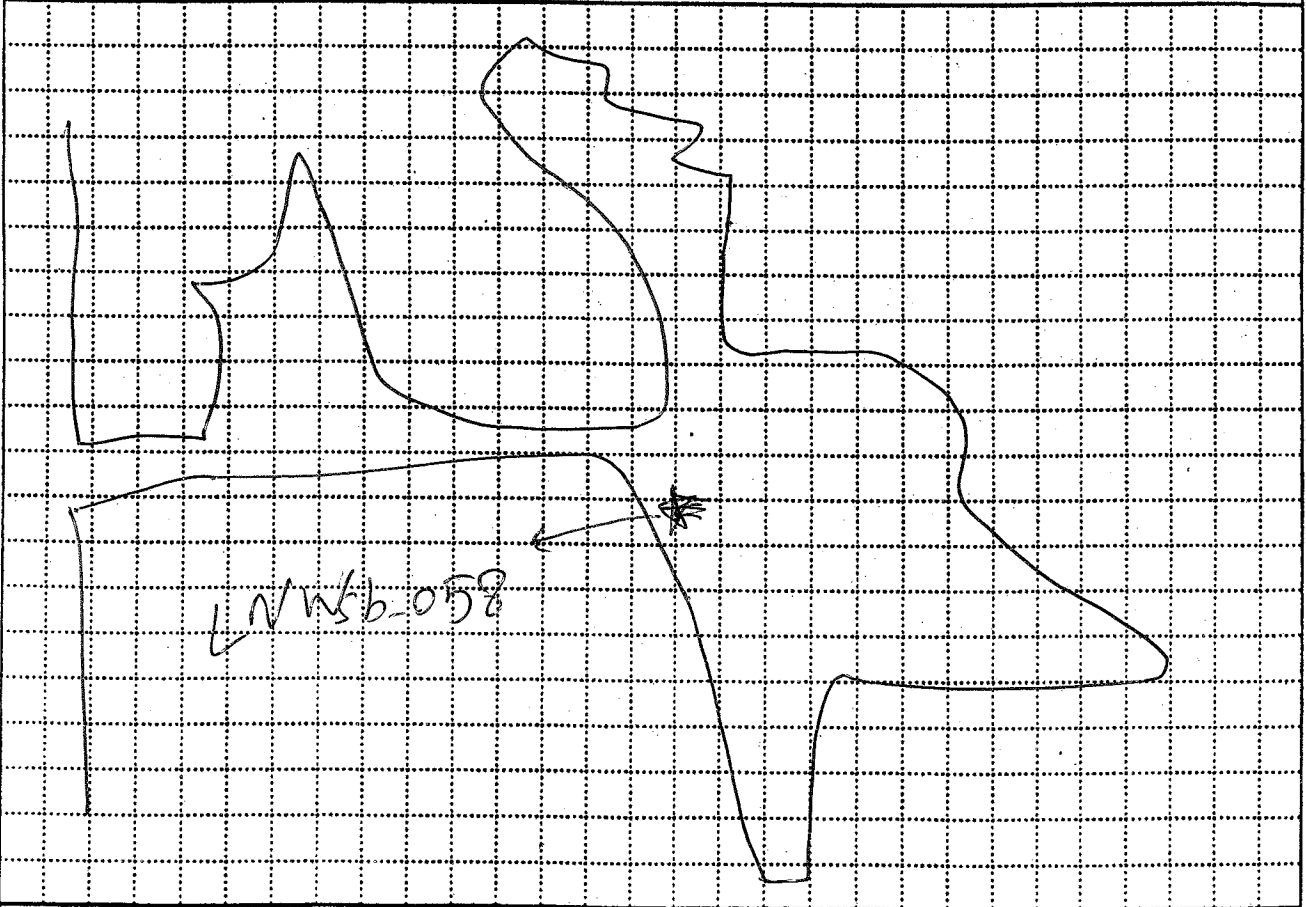
Soil sample description should include:
 Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:
 Color Odor Sheen Turbidity

Logged By: Shahay (Please Print) Reviewed by: ERIC ELLIS (Please Print)
 Signature: [Signature] Signature: [Signature] Date: 2/1/05

HTRW DRILLING LOG		DISTRICT		HOLE NUMBER LNWSb-058	
1. COMPANY NAME MKM		2. DRILL SUBCONTRACTOR AST		SHEET SHEETS 1 of 1	
3. PROJECT RVAAP 14			4. LOCATION landfill		
5. NAME OF DRILLER Ted Keen			6. MANUFACTURERS DESIGNATION OF DRILL 54 LF		
7. SIZE AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION			
		9. SURFACE ELEVATION			
		10. DATE STARTED 11-09-04		11. DATE COMPLETED 11-09-04	
12. OVERBURDEN THICKNESS		13. DEPTH GROUNDWATER ENCOUNTERED			
13. DEPTH DRILLED INTO ROCK		14. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
14. TOTAL DEPTH OF HOLE 10'		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
18. GEOTECHNICAL SAMPLES		DISTURBED <input type="checkbox"/>		UNDISTURBED <input checked="" type="checkbox"/>	
19. TOTAL NUMBER OF CORE BOXES					
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC <input checked="" type="checkbox"/>		METALS <input checked="" type="checkbox"/>	
		OTHER (SPECIFY) explosive		OTHER (SPECIFY)	
21. TOTAL CORE RECOVERY		22. DISPOSITION OF HOLE BACKFILLED <input checked="" type="checkbox"/> MONITORING WELL <input type="checkbox"/>			
		23. SIGNATURE OF INSPECTOR <i>[Signature]</i>			

LOCATION SKETCH/COMMENTS SCALE:



PROJECT RVAAP 14	HOLE NO. LNWSb-058
---------------------	-----------------------

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER
LNWsb-058

PROJECT RVAAP 14

INSPECTOR *Shahnam Taberinia*

SHEET 1 OF 1 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	7.5YR 3/2 ML 70% silt 20% clay 10% sand	0.3			1.0	FeO ₂ stain at 0.2' with organic odor
	1	10YR 4/6 ML silt 70% clay 20% sand 10%					
	2		1.0			1.0	
	3						
	4		1.7			2.0	
	5	10YR 3/4 ML 80% silt 15% clay 5% sand					
	6	soft	1.4				
	7						
	8	10YR 4/4 ML silt 95% clay 5% soft	0.6				
	9						
	10						

PROJECT RVAAP 14

TD = 10'

HOLE NO. LNWsb-058

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

1530 LNWSB-058

4-6'

Field Sampling Report

Location ID: LNWsb-059-50

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 11-10-04

Sampling Information

Source	Groundwater / Product	Surface Water	<u>Soils / Sediments / Sludge</u>		
Method	Bailer	Sample Bottle	Scoop		Trowel
	Pump	Bacon Bomb	Bowl		Hand Auger
			Push Probe		Plastic Liner
Type/Construction			Mattocks		Geoprobe X
Miscellaneous	Well Purging Form Yes - No				

Sample Collection: 0900 hrs Sample Type: Composite - MI - Grab
 If MI # of increments taken: _____ Location: Plotted on Map Staked in Field
 Estimated - Measured - Surveyed
 Sample Depth: 4-6' FT (below surface) Decon: Dedicated - Each Day - Each Location

Field Parameters (at time of sample)	Analytical Parameters			Other Parameters					
PID / FID Readings: Background: <u>0.0</u> <u>1.6</u>	VOC		TPH GRO	Corrosivity					
	SVOC	✓	TPH DRO	Reactivity Sulfide/Cyanide					
	Explosives	✓	Chromium +6	Ignitability					
Sample:	ppm	Propellants	Nitrate	QA Samples					
Water Level	FT	TAL Metals	✓						
Temperature	°C	Pesticides/PCBs					MS/MSD	Yes / No	NA
Sp. Conductance:	uMHOs	Cyanides					Duplicate ID		NA
pH	units	TOC					Equipment Rinse ID		NA
Turbidity	N.T.U.	Grain Size		Trip Blank ID		NA			

Sample Description

10YR 4/3, no odor, no staining
moist to wet, non plastic
sorted, sandy silt

Split Sample

Split Sample ID: _____

Name: _____
 Agency/Company: _____
 Address: _____

QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
 Parameters: Same as Above - As Listed

Soil sample description should include:

Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:

Color Odor Sheen Turbidity

Logged By: Shahnam Taheri (Please Print)

Reviewed by: ERIC ELIS (Please Print)

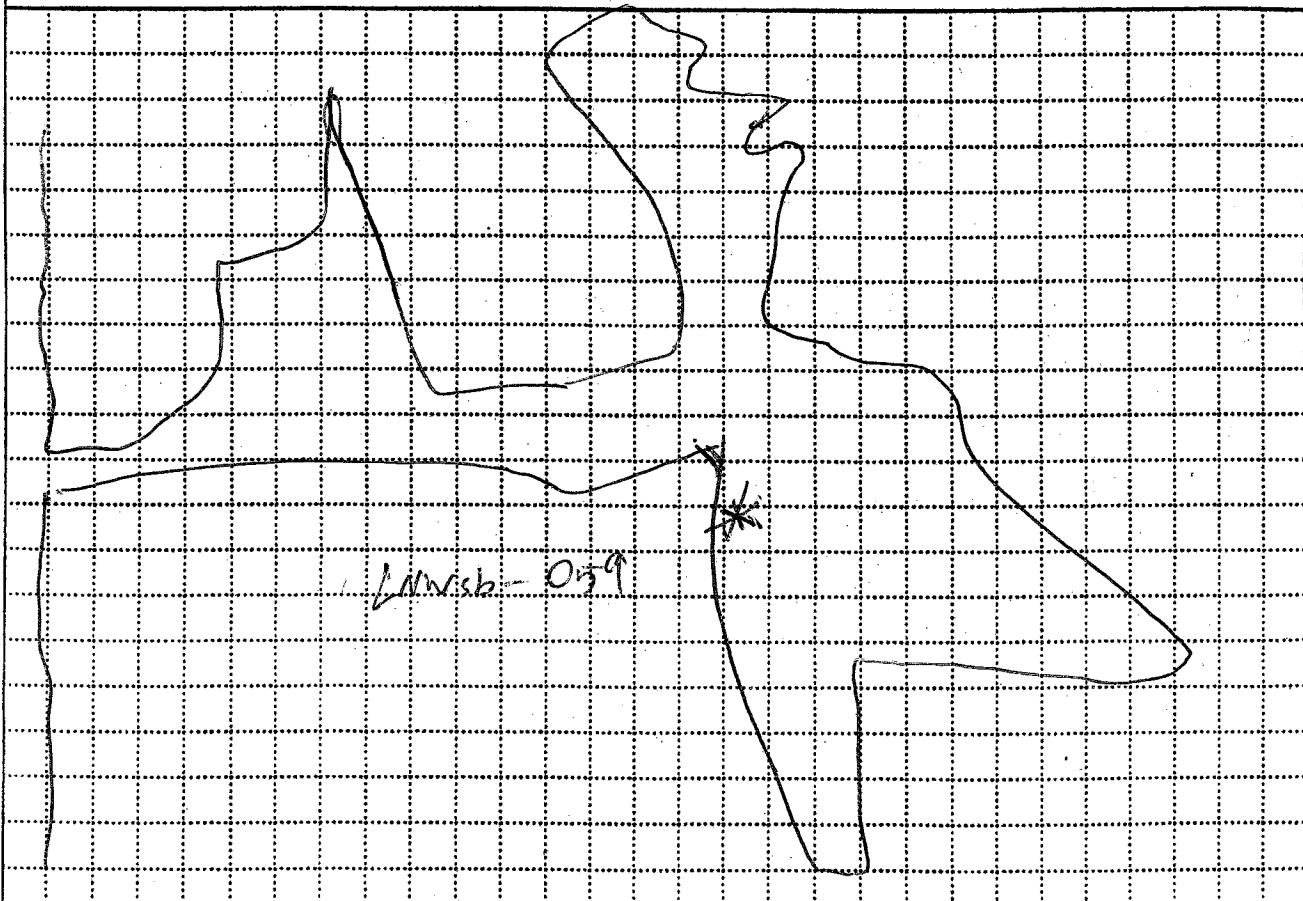
Signature: [Signature]

Signature: [Signature] Date: 2/1/05

HTRW DRILLING LOG		DISTRICT		HOLE NUMBER LNWSb-059	
1. COMPANY NAME MKM		2. DRILL SUBCONTRACTOR AST		SHEET SHEETS 1 OF 1	
3. PROJECT RVAPP 14			4. LOCATION Landfill		
5. NAME OF DRILLER Ted Keen			6. MANUFACTURERS DESIGNATION OF DRILL 54 LT		
7. SIZE AND TYPES OF (DRILLING AND) SAMPLING EQUIPMENT		8. HOLE LOCATION			
		9. SURFACE ELEVATION			
		10. DATE STARTED 11-10-04		11. DATE COMPLETED 11-10-04	
12. OVERBURDEN THICKNESS		13. DEPTH GROUNDWATER ENCOUNTERED			
13. DEPTH (DRILLED) INTO ROCK		14. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
14. TOTAL DEPTH OF HOLE 10'		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
18. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED	
				19. TOTAL NUMBER OF CORE BOXES	
20. SAMPLES FOR CHEMICAL ANALYSIS		S VOC		METALS	
		✓		✓	
				OTHER (SPECIFY) Eg Pb, Zn, Cu	
22. DISPOSITION OF HOLE		BACKFILLED		MONITORING WELL	
				OTHER (SPECIFY)	
				23. SIGNATURE OF INSPECTOR <i>[Signature]</i>	

LOCATION SKETCH/COMMENTS

SCALE:



PROJECT RVAPP 14	HOLE NO. LNWSb-059
---------------------	-----------------------

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

LNWsb-059

PROJECT

RVAPP 14

INSPECTOR

Shahram Taherinia

SHEET SHEETS

1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0.0	10YR 4/6 moist silt 70%, clay 20%, sand 10% ML	1.2			1.8
	1.0	10YR 4/4 silt 80%, clay 10%, clay 10%, moist no odor, no staining ML				
	2.0		1.2			1.8
	3.0	10YR 4/4 ML sand 5%, silt 60%, clay 35% very wet				met silt at 2.2
	4.0	10YR 4/3 ML silt 85%, clay 8% sand wet no odor	1.6		1.8	
	5.0					
	6.0		1.1			0.8
	7.0					
	8.0	10YR 4/4 Dry stiff silt 80%, sand 10%, clay 10% with some clay weathered rocks	1.2			0.8
	9.0					
	10.0					

PROJECT

RVAPP 14

TD = 10'

HOLE NO.

LNWsb-059

Field Sampling Report

Location ID: LMWSB-060

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 11-10-04

Sampling Information

Source	Groundwater / Product	Surface Water	<u>Soils / Sediments / Sludge</u>	
Method	Bailer	Sample Bottle	Scoop	Trowel
	Pump	Bacon Bomb	Bowl	Hand Auger
			Push Probe	Plastic Liner
Type/Construction			Mattocks	<u>Geo Probe</u> X
Miscellaneous	Well Purging Form Yes - No			

Sample Collection: 0930 hrs Sample Type: Composite - MI - Grab Location: Plotted on Map Staked in Field
 If MI, # of increments taken: _____ Estimated - Measured - Surveyed
 Sample Depth: 6-8' FT (below surface) Decon: Dedicated - Each Day - Each Location

Field Parameters (at time of sample)	Analytical Parameters			Other Parameters	
PID / FID Readings: Background: <u>0.0</u> ppm <u>0.9</u>	VOC		TPH GRO	Corrosivity	
	SVOC	✓	TPH DRO	Reactivity Sulfide/Cyanide	
	Explosives	✓	Chromium +6	Ignitability	
Sample: _____ ppm	Propellants		Nitrate		
Water Level _____ FT	TAL Metals	✓		QA Samples	
Temperature _____ °C	Pesticides/PCBs			MS/MSD	Yes / No NA
Sp. Conductance: _____ uMHOs	Cyanides			Duplicate ID	NA
pH _____ units	TOC			Equipment Rinse ID	NA
Turbidity _____ N.T.U.	Grain Size			Trip Blank ID	NA

Sample Description

10YR 3/4
no odor, no staining
moist, non plastic, sorted
silt 75%, clay 15%, sand 10%

Split Sample

Split Sample ID: _____
 Name: _____
 Agency/Company: _____
 Address: _____

QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
 Parameters: Same as Above - As Listed

Soil sample description should include:

Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:

Color Odor Sheen Turbidity

Logged By: Shahram Taherini (Please Print)

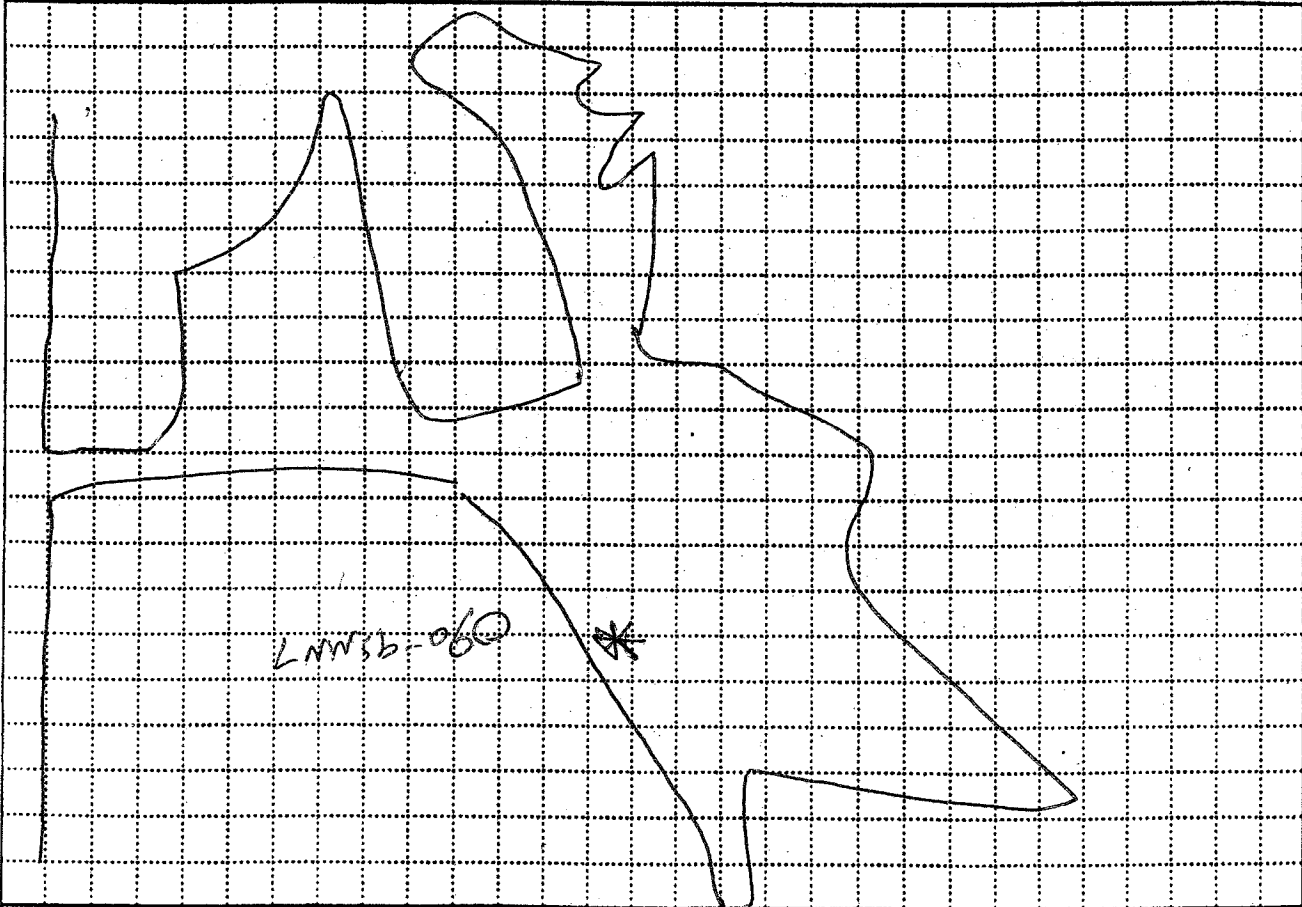
Reviewed by: ERIC ELLIS (Please Print)

Signature: [Signature]

Signature: [Signature] Date: 2/1/05

HTRW DRILLING LOG		DISTRICT		HOLE NUMBER LNWSb-060	
1. COMPANY NAME MKM		2. DRILL SUBCONTRACTOR AST		SHEET SHEETS OF	
3. PROJECT RVAPP 14			4. LOCATION Landfill		
5. NAME OF DRILLER Ted Keen			6. MANUFACTURER'S DESIGNATION OF DRILL 54 2T		
7. SIZE AND TYPE OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION		9. SURFACE ELEVATION	
		10. DATE STARTED 11-10-04		11. DATE COMPLETED 11-10-04	
12. OVERBURDEN THICKNESS		13. DEPTH GROUNDWATER ENCOUNTERED			
13. DEPTH DRILLED INTO ROCK		14. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
14. TOTAL DEPTH OF HOLE 10'		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
18. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED	
				19. TOTAL NUMBER OF CORE BOXES	
20. SAMPLES FOR CHEMICAL ANALYSIS		S VOC		METALS	
		✓		✓	
		OTHER (SPECIFY) Sediment		OTHER (SPECIFY)	
21. DISPOSITION OF HOLE		BACKFILLED		MONITORING WELL	
				OTHER (SPECIFY)	
		23. SIGNATURE OF INSPECTOR <i>[Signature]</i>			

LOCATION SKETCH/COMMENTS SCALE:



PROJECT RVAPP 14	HOLE NO. LNWSb-060
---------------------	-----------------------

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER
LW5b-060

PROJECT

RVAAP 14

INSPECTOR

Shahram Taherinia

SHEET SHEETS
1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	BLOW COUNT (G) Reviews	REMARKS (H)
	0.0	TOP SOIL					
	1	10YR 4/4 ML sand 40%, silt 50%, clay 6%, Sandy silt	0.5			1.8	
	2		0.9			1.8	
	3	10YR 5/6 ML silt 70%, clay 25%, sand 5%, grey veins					FeO ₂ stain at 2.9'
	4		0.7			2.0	
	5	10YR 4/6 ML Sandy silt, wet sand 40%, silt 55%, clay 5%					
	6	10YR 3/4 ML moist silt 75%, sand 10%, clay 15%	0.9	*		2.0	wet silt at 6.5'
	7						
	8		0.4			2.0	
	9	7.5YR 3/2 CL high plasticity clay 60%, silt 40%, with some sand					
	10						

PROJECT

RVAAP 14

TD = 10'

HOLE NO.

LW5b-060

Field Sampling Report

Location ID: LNWSB-061-50

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 11-10-04

Sampling Information

Source	Groundwater / Product	Surface Water	<u>Soils</u> / Sediments / Sludge	
Method	Bailer	Sample Bottle	Scoop	Trowel
	Pump	Bacon Bomb	Bowl	Hand Auger
			Push Probe	Plastic Liner
Type/Construction			Mattocks	Geoprobe X
Miscellaneous	Well Purging Form Yes - No			

Sample Collection: 1000 hrs Sample Type: Composite - MI - Grab Location: Plotted on Map Staked in Field
IFMI # of increments taken: _____
 Sample Depth: 4-6 FT (below surface) Decon: Dedicated - Each Day - Each Location
Estimated - Measured - Surveyed

Field Parameters (at time of sample)	Analytical Parameters			Other Parameters	
PID / FID Readings: Background: <u>0.0</u> ppm	VOC		TPH GRO	Corrosivity	
	SVOC	✓	TPH DRO	Reactivity Sulfide/Cyanide	
	Explosives	✓	Chromium +6	Ignitability	
Sample: <u>0.0</u> ppm	Propellants		Nitrate		
Water Level	TAL Metals	✓		QA Samples	
Temperature	Pesticides/PCBs			MS/MSD	Yes / No NA
Sp. Conductance:	Cyanides			Duplicate ID	NA
pH	TOC			Equipment Rinse ID	NA
Turbidity	Grain Size			Trip Blank ID	NA

Sample Description
10 VR 4/6 no odor, no staining
moist, soft, sorted from plastic
silt 75%, clay 15%,
sand 10%

Split Sample

Split Sample ID: _____
 Name: _____
 Agency/Company: _____
 Address: _____

QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
 Parameters: Same as Above - As Listed

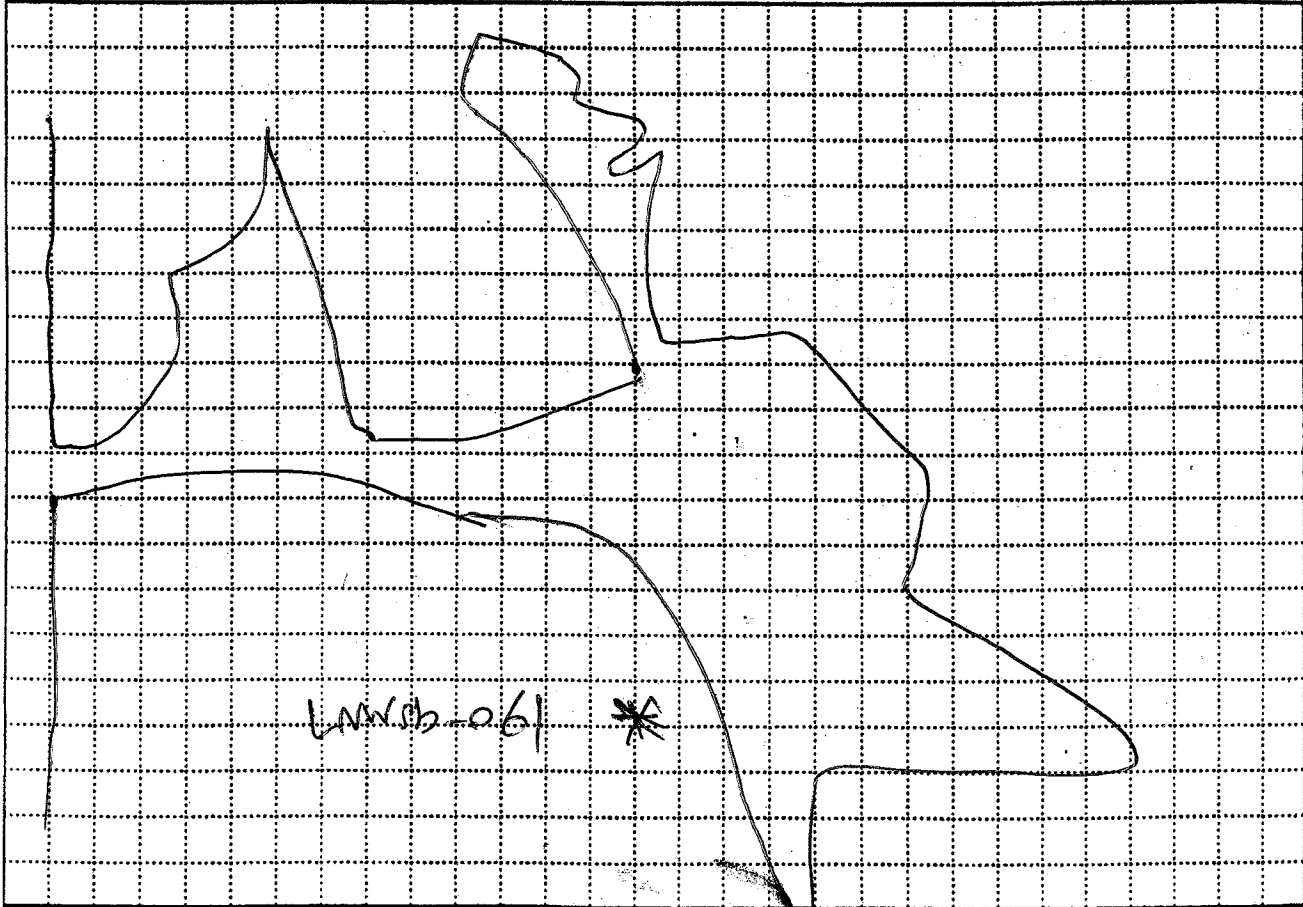
Soil sample description should include:
 Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:
 Color Odor Sheen Turbidity

Logged By: Sharon G. Gherin (Please Print) Reviewed by: ERIC ELLIS (Please Print)
 Signature: [Signature] Signature: [Signature] Date: 2/1/05

HTRW DRILLING LOG		DISTRICT		HOLE NUMBER LW5b-061	
1. COMPANY NAME MKM		2. DRILL SUBCONTRACTOR AST		SHEET SHEETS OF	
3. PROJECT RVAPP 14			4. LOCATION Land Fill		
5. NAME OF DRILLER Ted Keen			6. MANUFACTURERS DESIGNATION OF DRILL 54 LT		
7. SIZE AND TYPE OF (DRILLING) AND SAMPLING EQUIPMENT		8. HOLE LOCATION		9. SURFACE ELEVATION	
		10. DATE STARTED 11-10-04		11. DATE COMPLETED 11-10-04	
12. OVERBURDEN THICKNESS		13. DEPTH GROUNDWATER ENCOUNTERED			
13. DEPTH (DILLED) INTO ROCK		14. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
14. TOTAL DEPTH OF HOLE 10'		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
18. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED	
				19. TOTAL NUMBER OF CORE BOXES	
20. SAMPLES FOR CHEMICAL ANALYSIS		S VOC		METALS	
		✓		OTHER (SPECIFY) ENVIRONMENTAL	
21. DISPOSITION OF HOLE		BACKFILLED		MONITORING WELL	
				OTHER (SPECIFY)	
				22. SIGNATURE OF DIRECTOR	
				<i>[Signature]</i>	

LOCATION SKETCH/COMMENTS SCALE:



PROJECT RVAPP 14	HOLE NO. LW5b-061
---------------------	----------------------

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER
LNWsb-061

PROJECT

RVAAP 14

INSPECTOR

Shahram Taherina

SHEET SHEETS

1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	BLOW-COUNT (G)	REMARKS (H)
	00	10YR 3/2 ML silt 60% clay 30% sand 10% soft moist	1.1		1-8 st	1-8	
	1	10YR 4/6 ML sand silt silt 65% sand 10% clay 25% soft moist	0.8		st 1-8	1-8	
	2						
	3						
	4		1.8	*	* 2-0	2-0	net silt at 4.2'
	5						
	6		1.2		st 2-0	2-0	
	7						
	8	10YR 4/4 ML stiff, moist silt 70% clay 15% sand 15%			st 2-0	2-0	
	9						
	10						

PROJECT

RVAAP 14

TD = 10'

HOLE NO.

LNWsb-061

Field Sampling Report

Location ID: LNWSb-062

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 11-10-04

Sampling Information

Source	Groundwater / Product	Surface Water	<u>Soils</u> Sediments / Sludge		
Method	Bailer	Sample Bottle	Scoop		Trowel
	Pump	Bacon Bomb	Bowl		Hand Auger
			Push Probe		Plastic Liner
Type/Construction			Mattocks		GeoProbe X
Miscellaneous	Well Purging Form Yes -/No				

Sample Collection: 1030 hrs Sample Type: Composite - MI - Grab Location: Plotted on Map - Staked in Field
If MI, # of increments taken: _____
 Sample Depth: 6-8 FT (below surface) Decon: Dedicated - Each Day - Each Location Estimated - Measured - Surveyed

Field Parameters <small>(at time of sample)</small>	Analytical Parameters			Other Parameters		
PID / FID Readings: Background: <u>0.0</u> ppm <u>2.3</u>	VOC		TPH GRO	/		
	SVOC	✓	TPH DRO			
	Explosives	✓	Chromium +6			
Sample: _____ ppm	Propellants	Nitrate				
Water Level _____ FT	TAL Metals	✓				
Temperature _____ °C	Pesticides/PCBs		QA Samples			
Sp. Conductance: _____ uMHOs	Cyanides		MS/MSD	Yes / No	NA	
pH _____ units	TOC		Duplicate ID		NA	
Turbidity _____ N.T.U.	Grain Size		Equipment Rinse ID		NA	
			Trip Blank ID		NA	

Sample Description

10YR 4/8, no odor, no staining
silt 70%, clay 20%, sand 10%
moist low plasticity, sorted

Split Sample

Split Sample ID: _____
 Name: _____
 Agency/Company: _____
 Address: _____

QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
 Parameters: Same as Above - As Listed

Soil sample description should include:

Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:

Color Odor Sheen Turbidity

Logged By: Shantanu Dabheri (Please Print)

Reviewed by: ERIC ELLIS (Please Print)

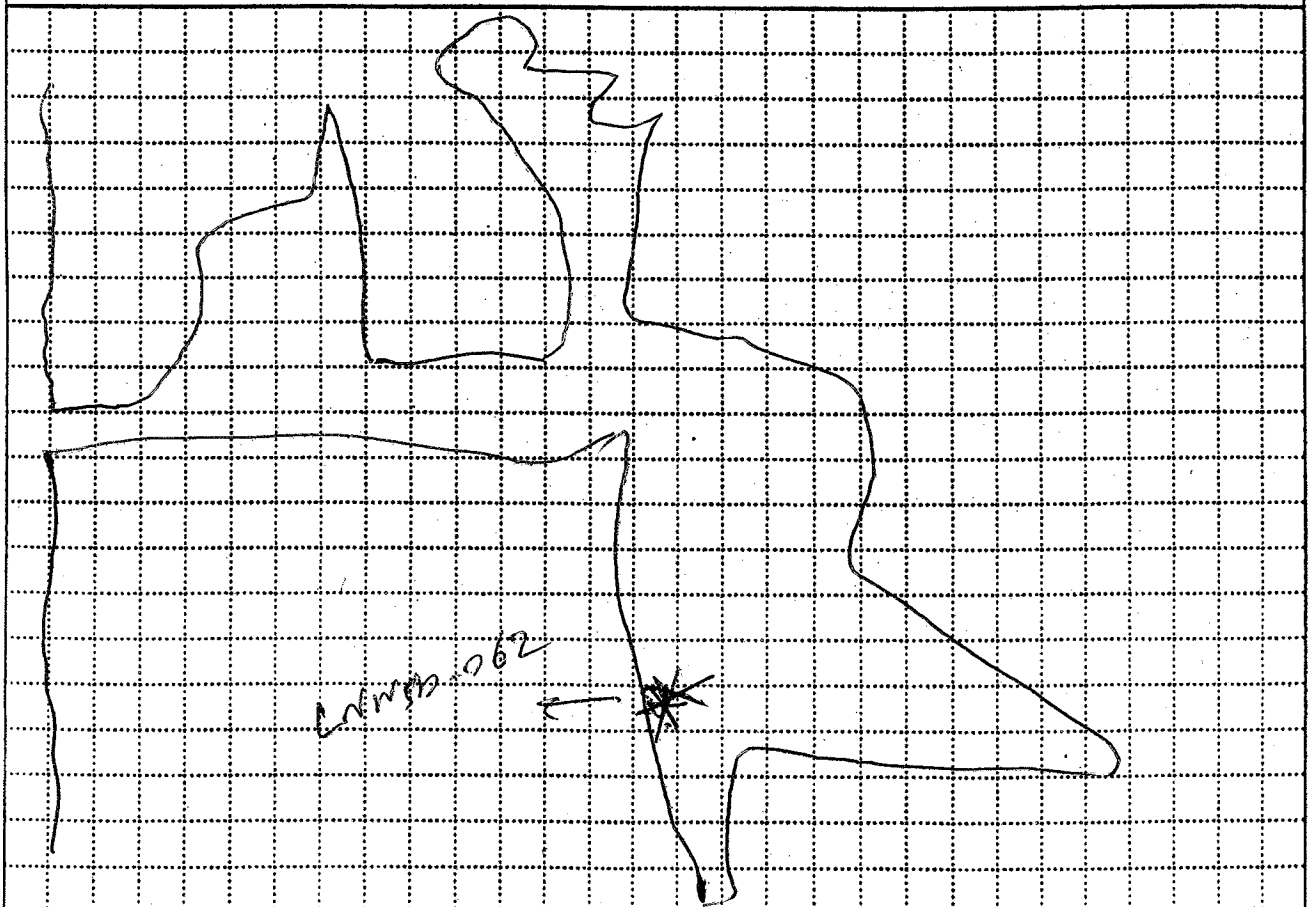
Signature: [Signature]

Signature: [Signature] Date: 2/1/05

HTRW DRILLING LOG		DISTRICT		HOLE NUMBER LNWSb-062	
1. COMPANY NAME MKM		2. DRILL SUBCONTRACTOR AST		SHEET SHEETS OF	
3. PROJECT RVAPP 14			4. LOCATION Land fill		
5. NAME OF DRILLER Ted Keen			6. MANUFACTURERS DESIGNATION OF DRILL 54 LT		
7. SIZE AND TYPE OF (DRILLING) AND SAMPLING EQUIPMENT		8. HOLE LOCATION			
		9. SURFACE ELEVATION			
		10. DATE STARTED 11-10-04		11. DATE COMPLETED 11-10-04	
12. OVERBURDEN THICKNESS		13. DEPTH GROUNDWATER ENCOUNTERED			
13. DEPTH (DRILLED) INTO ROCK		14. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
14. TOTAL DEPTH OF HOLE 10'		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
18. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED	
				19. TOTAL NUMBER OF CORE BOXES	
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)
		✓	✓	EXPLOSIVE	
22. DISPOSITION OF HOLE		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
		23. SIGNATURE OF INSPECTOR <i>[Signature]</i>			

LOCATION SKETCH/COMMENTS

SCALE:



PROJECT RVAPP 14	HOLE NO. LNWSb-062
---------------------	-----------------------

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER
LWWSB-062
SHEET OF SHEETS

PROJECT RVAAP 14

INSPECTOR Shaligram Tamersina

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	BLOW-COUNT RECORD (G)	REMARKS (H)
	0.0	Topsoil	1.3			1.8	
	1	10YR 3/2 med stiff silt 70% moist clay 20% ML sand 10%					
	2		1.6			1.8	FeO ₂ staining at 2.2
	3						
	4	7.5 YR 4/6 ML silt 70% med stiff clay 10% wet sand 20%	2.1			2.0	
	5						
	6	10YR 4/6 ML silt 80% soft clay 15% wet sand 5%	2.3			2.0	
	7						
	8						
	9	7.5YR 3/1 med stiff silt 70% moist clay 20% ML sand 10%	2.1			2.0	
	10						

PROJECT RVAAP 14

TD = 10'

HOLE NO. LWWSB-062

Field Sampling Report

Location ID: LNWSb-063-80

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 11-10-04

Sampling Information

Source	Groundwater / Product	Surface Water	<u>Soils</u> / Sediments / Sludge	
Method	Bailer	Sample Bottle	Scoop	Trowel
	Pump	Bacon Bomb	Bowl	Hand Auger
			Push Probe	Plastic Liner
Type/Construction			Mattocks	<u>Geoprobe</u> X
Miscellaneous	Well Purging Form Yes - No			

Sample Collection: 115 hrs

Sample Type: Composite - MI - Grab

Location: Plotted on Map Staked in Field
Estimated - Measured - Surveyed

Sample Depth: 4-6 FT (below surface)

Decon: Dedicated - Each Day - Each Location

Field Parameters

(at time of sample)

PID / FID Readings:

Background: 0.0 ppm
2.6

Sample: _____ ppm

Water Level

Temperature

Sp. Conductance:

pH

Turbidity

Analytical Parameters

VOC		TPH GRO	
SVOC	X	TPH DRO	
Explosives	X	Chromium +6	
Propellants		Nitrate	
TAL Metals	X		
Pesticides/PCBs			
Cyanides			
TOC			
Grain Size			

Other Parameters

Corrosivity			
Reactivity Sulfide/Cyanide			
Ignitability			

QA Samples

MS/MSD	Yes / No	NA
Duplicate ID		NA
Equipment Rinse ID		NA
Trip Blank ID		NA

Sample Description

10 YR 4/4 NO odor, some FeO2 stain, stiff, moist, sorted, nonplastic, silt 85%, clay 10%, sand 5%

Split Sample

Split Sample ID: _____

Name: _____
Agency/Company: _____
Address: _____

QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
Parameters: Same as Above - As Listed

Soil sample description should include:

Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:

Color Odor Sheen Turbidity

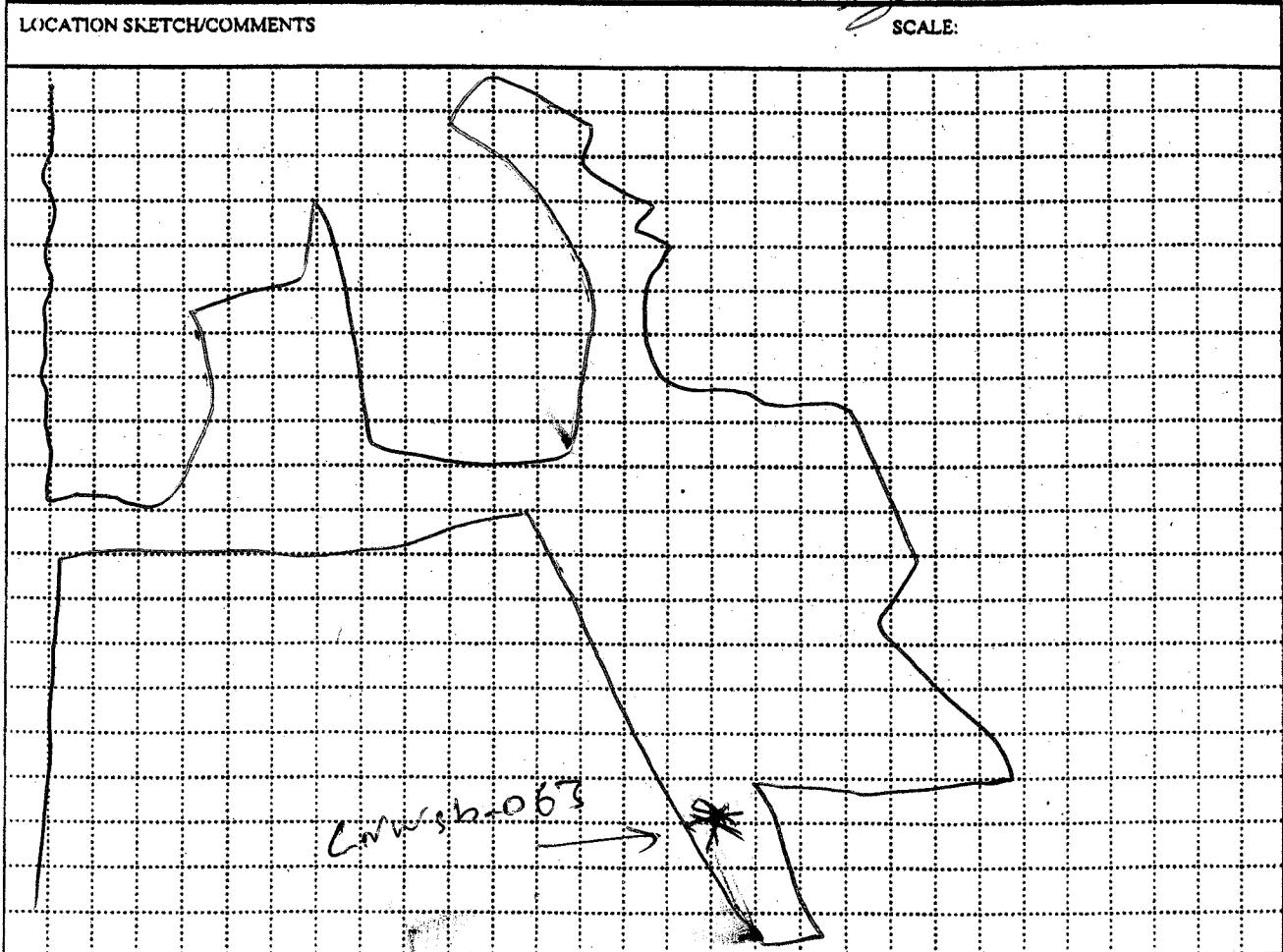
Logged By: Shamram Talwar (Please Print)

Reviewed by: ERIC EWS (Please Print)

Signature: [Signature]

Signature: [Signature] Date: 2/1/05

HTRW DRILLING LOG		DISTRICT		HOLE NUMBER <i>CNWSb-063</i>	
1. COMPANY NAME <i>MKM</i>		3. DRILL SUBCONTRACTOR <i>AST</i>		SHEET SHEETS OF	
2. PROJECT <i>RVAAP 14</i>			4. LOCATION <i>Land Fill</i>		
5. NAME OF DRILLER <i>Ted Keen</i>			6. MANUFACTURERS DESIGNATION OF DRILL <i>54 LT</i>		
7. SIZE AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION		9. SURFACE ELEVATION	
		10. DATE STARTED <i>11-10-04</i>		11. DATE COMPLETED <i>11-10-04</i>	
12. OVERBURDEN THICKNESS		13. DEPTH GROUNDWATER ENCOUNTERED			
13. DEPTH DRILLED INTO ROCK		14. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
14. TOTAL DEPTH OF HOLE <i>10'</i>		15. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
16. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED	
17. SAMPLES FOR CHEMICAL ANALYSIS		S VOC		METALS	
18. DISPOSITION OF HOLE		BACKFILLED		MONITORING WELL	
				OTHER (SPECIFY) <i>EXPLOSIVES</i>	
				19. TOTAL NUMBER OF CORE BOXES	
				20. TOTAL CORE RECOVERY	
				21. SIGNATURE OF INSPECTOR <i>[Signature]</i>	



PROJECT <i>RVAAP 14</i>	HOLE NO. <i>CNWSb-063</i>
----------------------------	------------------------------

HTRW DRILLING LOG (CONTINUATION SHEET)							HOLE NUMBER LNWSB-063
PROJECT RVAAP 14			INSPECTOR Shahram Taherzadeh			SHEET 1 OF 1	
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	SCOW COUNT Reading (G)	REMARKS (H)
	0.0	TOP SOIL					
	1	10YR 4/4 med stiff moist, silt 85%, clay 10%, sand 5%	1.5			1.6	
	2		2.2			1.6	
	3						
	4		2.6		*	2.0	
	5						FeO ₂ stain at 4.8'
	6					2.0	
	7	10YR 4/4 ves stiff silt 90% dry clay 10% silt some sand	1.7				
	8	10YR 4/6 stiff silt 70% moist clay 12% silt sand 20%	1.7			0.8	
	9	Refusal					
	10						

PROJECT RVAAP 14 TD = 10' HOLE NO. LNWSB-063

1115 LNWSB-063

4-6'

Field Sampling Report

Location ID: LNW 80-064-50

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 11-10-04

Sampling Information

Source	Groundwater / Product	Surface Water	<u>Soils</u> Sediments / Sludge	
Method	Bailer	Sample Bottle	Scoop	Trowel
	Pump	Bacon Bomb	Bowl	Hand Auger
			Push Probe	Plastic Liner
Type/Construction			Mattocks	Geoprobe X
Miscellaneous	Well Purging Form Yes - No			

Sample Collection: 1245 hrs Sample Type: Composite - MI - Grab
 If MI, # of increments taken: _____ Location: Plotted on Map - Staked in Field
 Sample Depth: 2-4 FT (below surface) Decon: Dedicated - Each Day - Each Location
 Estimated - Measured - Surveyed

Field Parameters (at time of sample)	Analytical Parameters			Other Parameters	
PID / FID Readings: Background: ppm <u>0.0</u> <u>2.8</u>	VOC		TPH GRO	Corrosivity	
	SVOC	X	TPH DRO	Reactivity Sulfide/Cyanide	
	Explosives	X	Chromium +6	Ignitability	
Sample: ppm	Propellants		Nitrate		
Water Level FT	TAL Metals	X		QA Samples	
Temperature °C	Pesticides/PCBs			MS/MSD	Yes / No <u>NA</u>
Sp. Conductance: uMHOs	Cyanides			Duplicate ID	<u>LNWSb-064-DUP</u> NA
pH units	TOC			Equipment Rinse ID	<u>NA</u>
Turbidity N.T.U.	Grain Size			Trip Blank ID	<u>NA</u>

Sample Description

10yr R 4/6 DRY, no odor
no staining, well sorted
non plastic 75%, silt, 20% clay
5% sand

Split Sample

Split Sample ID: LNWSb-064-50
 Name: JOHN JANT (CERCLER-ED)
 Agency/Company: USACE - LOUISVILLE
 Address: 600 DR. MARTIN LUTHER KING PLAZA
LOUISVILLE, KY 40202

QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
 Parameters: Same as Above As Listed

Soil sample description should include:

Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:

Color Odor Sheen Turbidity

Logged By: Shawnna Taherim (Please Print)

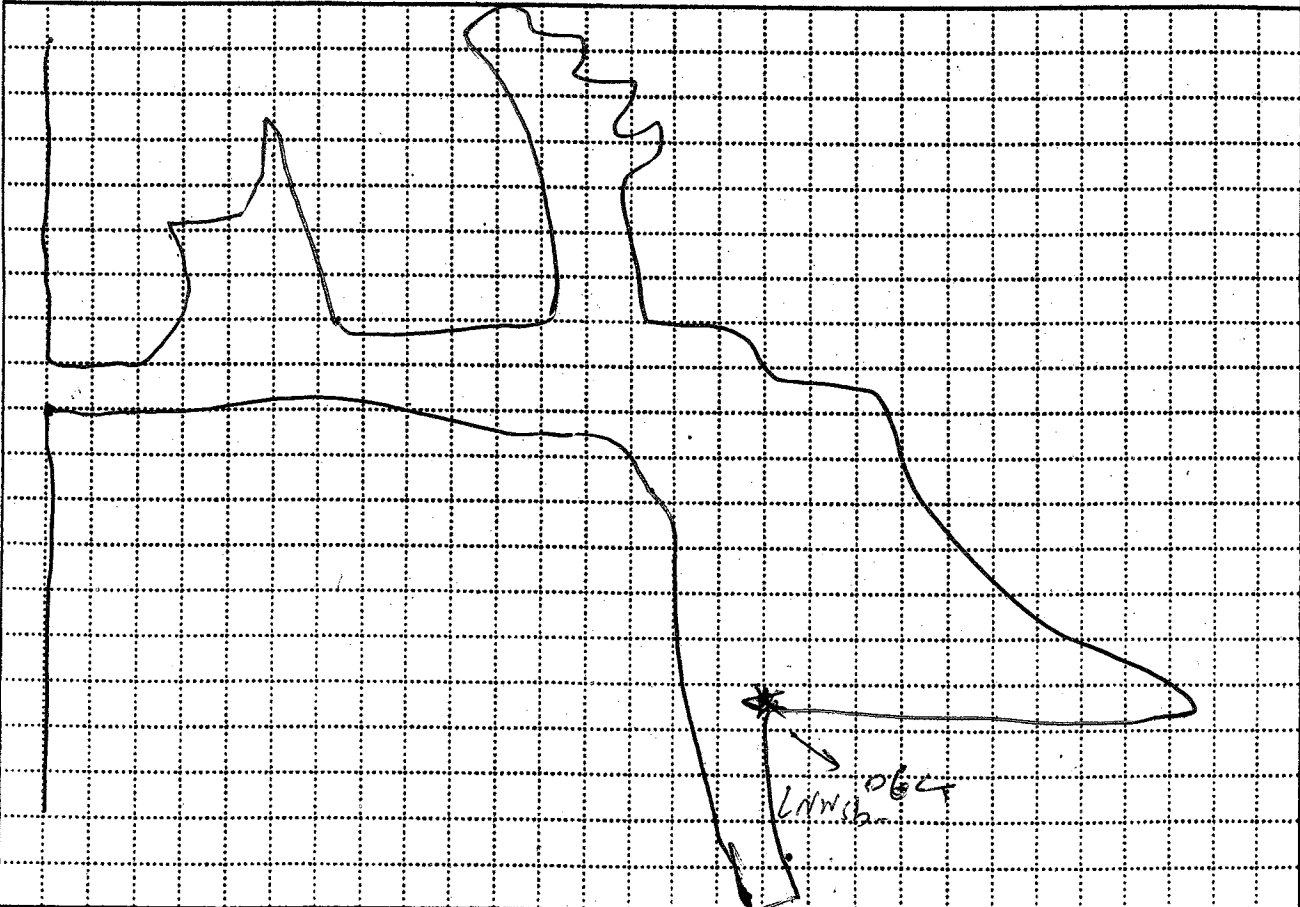
Reviewed by: ERIC FUS (Please Print)

Signature: [Signature]

Signature: [Signature] Date: 2/1/05

HTRW DRILLING LOG		DISTRICT		HOLE NUMBER <i>CNWSB-064</i>	
1. COMPANY NAME <i>MKM</i>		2. DRILL SUBCONTRACTOR <i>AST</i>		SHEET SHEETS <i>1 OF 1</i>	
3. PROJECT <i>RVAPP</i>			4. LOCATION <i>Land fill</i>		
5. NAME OF DRILLER <i>Teel Keen</i>			6. MANUFACTURERS DESIGNATION OF DRILL <i>54 LT</i>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION		9. SURFACE ELEVATION	
		10. DATE STARTED <i>11-10-04</i>		11. DATE COMPLETED <i>11-10-04</i>	
12. OVERBURDEN THICKNESS		13. DEPTH GROUNDWATER ENCOUNTERED			
13. DEPTH DRILLED INTO ROCK		14. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
14. TOTAL DEPTH OF HOLE <i>10'</i>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
18. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED	
				19. TOTAL NUMBER OF CORE BOXES	
20. SAMPLES FOR CHEMICAL ANALYSIS		S VOC		METALS	
		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
				OTHER (SPECIFY) <i>Explosives</i>	
21. DISPOSITION OF HOLE		BACKFILLED		MONITORING WELL	
		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
				OTHER (SPECIFY)	
				23. SIGNATURE OF INSPECTOR <i>[Signature]</i>	

LOCATION SKETCH/COMMENTS SCALE:



PROJECT <i>RVAPP 14</i>	HOLE NO. <i>CNWSB-064</i>
----------------------------	------------------------------

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

LNWSB-064

PROJECT

RVAAP 14

INSPECTOR

Shahram Tavnerina

SHEET

SHEETS

1 OR

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	BLOW COUNT - (G)	REMARKS (H)
	00	TOP SOIL					
	1	7.5 YR 4/8 med stiff silt 70% clay 25% sand 5%	1.6			1.8	
	2	10 YR 4/8 DRY silt 75% med clay 20% stiff sand 5%	2.8		*	1.8	
	3						
	4		2.4			2.0	
	5						
	6		1.6			2.0	
	7						
	8	10 YR 3/8 med stiff silt with moist some clay	1.3			2.8	
	9						
	10						

PROJECT

RVAAP 14

TD=10'

HOLE NO.

LNWSB-064

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

1245 LNWSB-064 2'4'

DWR
split

Field Sampling Report

Location ID: LAW 56-065-80

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 11-10-04

Sampling Information

Source	Groundwater / Product	Surface Water	Soils / Sediments / Sludge		
Method	Bailer	Sample Bottle	Scoop		Trowel
	Pump	Bacon Bomb	Bowl		Hand Auger
			Push Probe		Plastic Liner
Type/Construction			Mattocks		Geoprobe X
Miscellaneous	Well Purging Form Yes - No				

Sample Collection: 11:45 hrs

Sample Type: Composite - MI - Grab
If MI # of increments taken: _____

Location: Plotted on Map Staked in Field
Estimated - Measured - Surveyed

Sample Depth: 0-4 FT (below surface)

Decon: Dedicated - Each Day - Each Location

Field Parameters (at time of sample)	Analytical Parameters			Other Parameters		
PID / FID Readings: Background: <u>0.0</u> ppm <u>2.7</u>	VOC		TPH GRO	Corrosivity		
	SVOC	X	TPH DRO	Reactivity Sulfide/Cyanide		
	Explosives	X	Chromium +6	Ignitability		
Sample: _____ ppm	Propellants		Nitrate			
Water Level _____ FT	TAL Metals	X		QA Samples		
Temperature _____ °C	Pesticides/PCBs			MS/MSD	Yes / No	NA
Sp. Conductance: _____ uMHOs	Cyanides			Duplicate ID		NA
pH _____ units	TOC			Equipment Rinse ID		NA
Turbidity _____ N.T.U.	Grain Size			Trip Blank ID		NA

Sample Description

10 YR 3/3, no odor, no staining
moist, sorted, low plasticity
silt 70%, sand 20%, clay 10%

Split Sample

Split Sample ID: _____
Name: _____
Agency/Company: _____
Address: _____

QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
Parameters: Same as Above - As Listed

Soil sample description should include:

Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:

Color Odor Sheen Turbidity

Logged By: Sharon Robinson (Please Print)

Reviewed by: ERIC ELIS (Please Print)

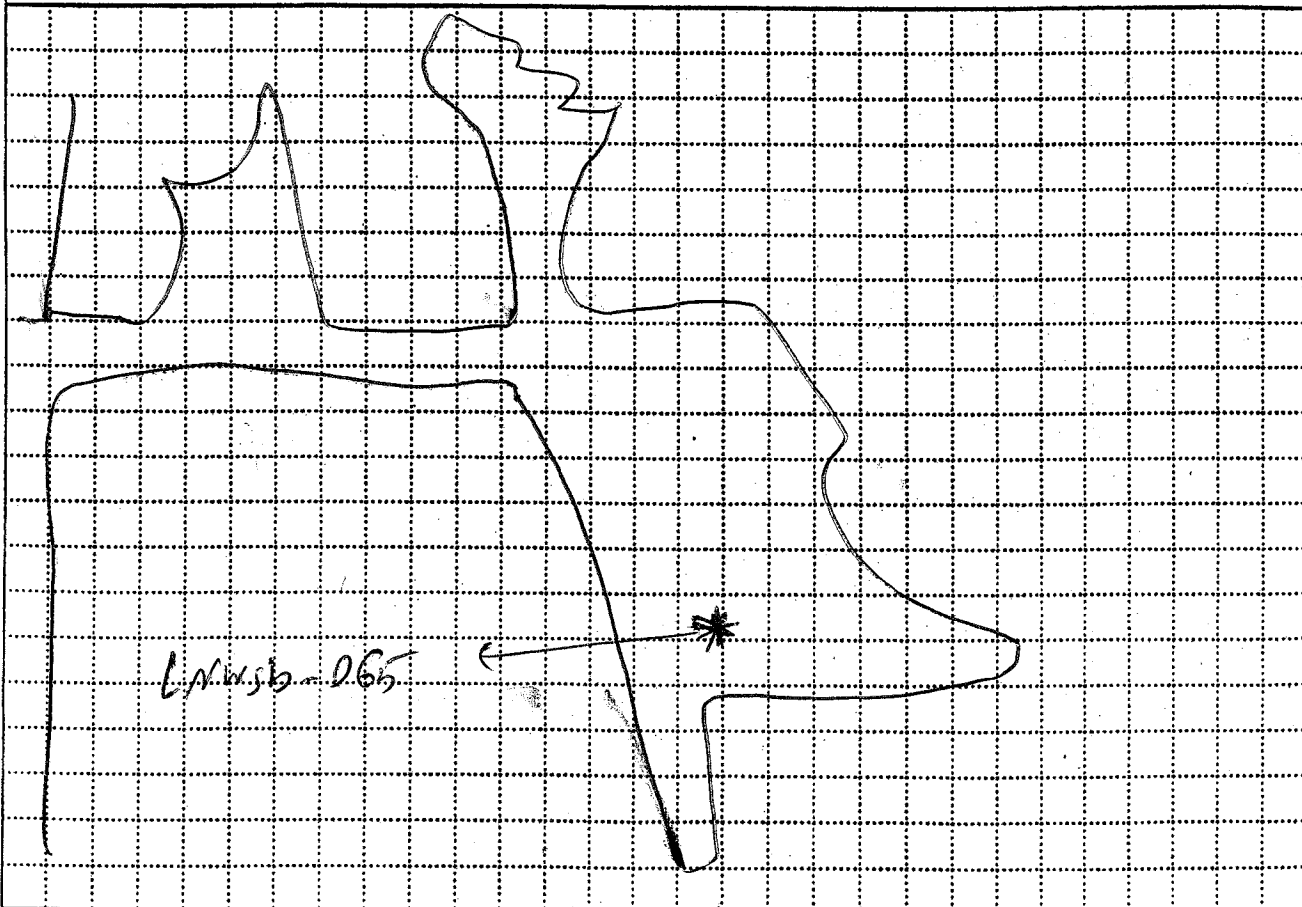
Signature: [Signature]

Signature: [Signature] Date: 2/1/05

HTRW DRILLING LOG		DISTRICT <i>Shahram Tarkesimia</i>		HOLE NUMBER <i>LNWSb-065</i>	
1. COMPANY NAME <i>MKM</i>		2. DRILL SUBCONTRACTOR <i>AST</i>		SHEET SHEETS <i>1 of 1</i>	
3. PROJECT			4. LOCATION <i>Land Fill</i>		
5. NAME OF DRILLER <i>Ted Keen</i>			6. MANUFACTURERS DESIGNATION OF DRILL <i>54 LT</i>		
7. SIZE AND TYPE OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION			
		9. SURFACE ELEVATION			
		10. DATE STARTED <i>11-10-04</i>		11. DATE COMPLETED <i>11-10-04</i>	
12. OVERBURDEN THICKNESS		13. DEPTH GROUNDWATER ENCOUNTERED			
13. DEPTH DRILLED INTO ROCK		14. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
14. TOTAL DEPTH OF HOLE <i>10'</i>		15. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
16. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED	
				19. TOTAL NUMBER OF CORE BOXES	
20. SAMPLES FOR CHEMICAL ANALYSIS		S VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)
		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<i>sp. logics</i>	
21. DISPOSITION OF HOLE		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	22. TOTAL CORE RECOVERY
		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
		23. SIGNATURE OF INSPECTOR <i>[Signature]</i>			

LOCATION SKETCH/COMMENTS

SCALE:



PROJECT <i>RVAAP14</i>	HOLE NO. <i>LNWSb-065</i>
---------------------------	------------------------------

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

RWSB-065

PROJECT

RVAAP 14

INSPECTOR

Shahram Taherinia

SHEET

SHEETS

1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	BLOW COUNT (G)	REMARKS (H)
	0.0	TOP SOIL	2.1			1.6	
	1	10YR 3/6 soft moist 70% silt 20% sand 10% clay ML					
	2		2.7			1.6	
	3	10YR 3/3 soft moist 70% silt 20% sand ML 10% clay					
	4		2.3			0.6	
	5	10YR 3/1 soft moist 90% silt ML clay & sand 10%					
	6	10YR 4/3 soft wet silt with some clay ML	1.6			0.6	
	7						
	8	10YR 3/1 med stiff 10YR 3/1 med stiff silt with moist some clay	1.2				
	9						
	10						

PROJECT

RVAAP 14

TD = 10'

HOLE NO.

RWSB-065

Field Sampling Report

Location ID: LNWSB-066-50

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 11-10-04

Sampling Information

Source	Groundwater / Product	Surface Water	<u>Soils</u> / Sediments / Sludge	
Method	Bailer	Sample Bottle	Scoop	Trowel
	Pump	Bacon Bomb	Bowl	Hand Auger
			Push Probe	Plastic Liner
Type/Construction			Mattocks	Geoprobe X
Miscellaneous	Well Purging Form Yes - No			

Sample Collection: 1415 hrs

Sample Type: Composite - MI - Grab
If MI, # of increments taken: _____

Location: Plotted on Map Staked in Field
Estimated - Measured - Surveyed

Sample Depth: 4-6 FT (below surface)

Decon: ~~Dedicated~~ Each Day - Each Location

Field Parameters (at time of sample)	Analytical Parameters			Other Parameters	
PID / FID Readings: Background: <u>0.0</u> ppm <u>2.3</u>	VOC		TPH GRO	Corrosivity	
	SVOC	X	TPH DRO	Reactivity Sulfide/Cyanide	
	Explosives	X	Chromium +6	Ignitability	
Sample: _____ ppm	Propellants		Nitrate		
Water Level _____ FT	TAL Metals	X		QA Samples	
Temperature _____ °C	Pesticides/PCBs			MS/MSD	Yes / No NA
Sp. Conductance: _____ uMHOs	Cyanides			Duplicate ID	NA
pH _____ units	TOC			Equipment Rinse ID	NA
Turbidity _____ N.T.U.	Grain Size			Trip Blank ID	NA

Sample Description

10YR 4/4, no odors, no Rainy
moist, Non plastic, well sorted
silty sand silt 60%
sand 40%

Split Sample

Split Sample ID: _____
Name: _____
Agency/Company: _____
Address: _____

QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
Parameters: Same as Above - As Listed

Soil sample description should include:

Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:

Color Odor Sheen Turbidity

Logged By: Shahira Tabusheh (Please Print)

Reviewed by: ERIC EWIS (Please Print)

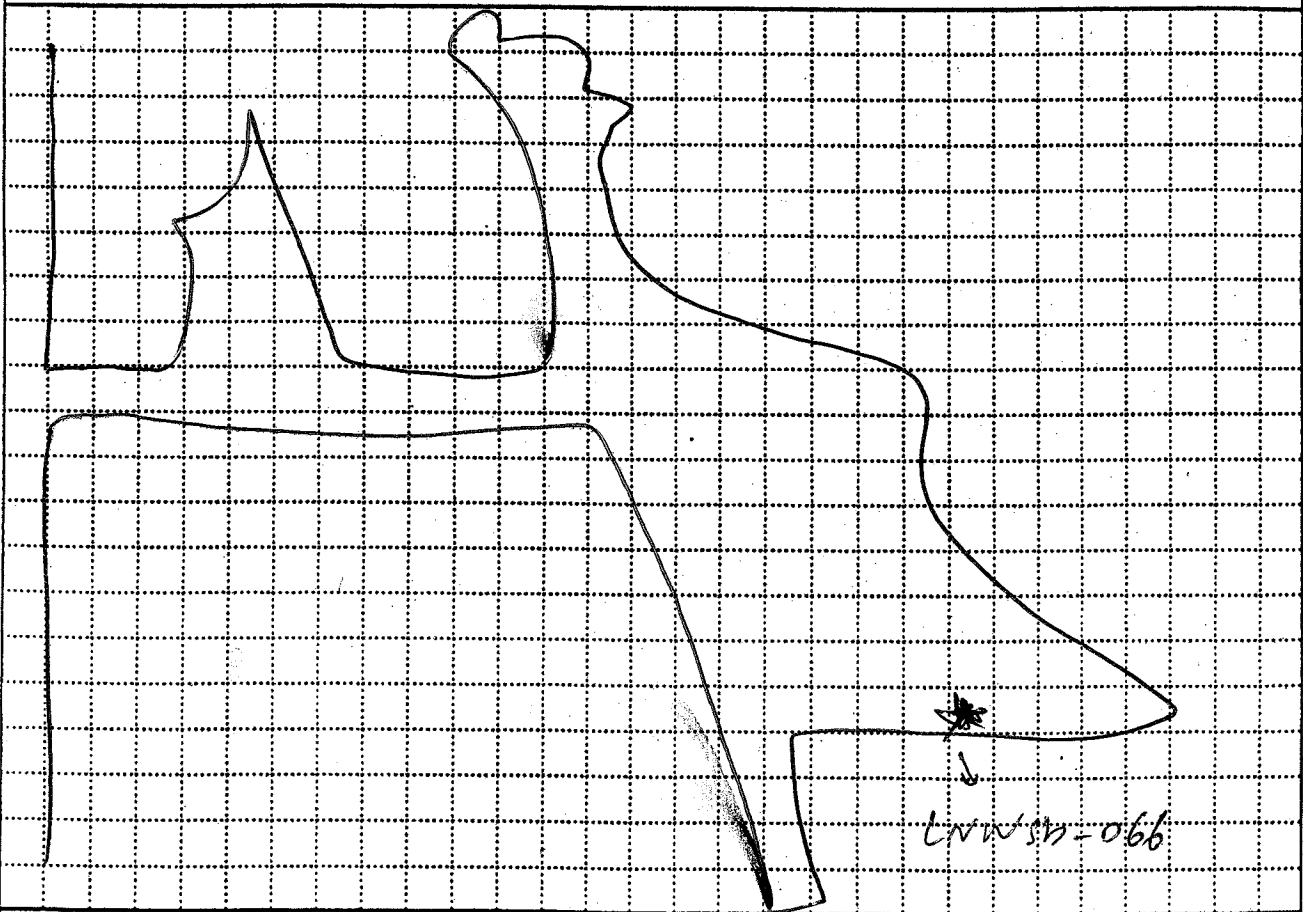
Signature: [Signature]

Signature: [Signature] Date: 2/1/05

HTRW DRILLING LOG		DISTRICT		HOLE NUMBER <i>LNWSb-066</i>	
1. COMPANY NAME <i>MKM</i>		2. DRILL SUBCONTRACTOR <i>AST</i>		SHEET SHEETS OF	
3. PROJECT			4. LOCATION <i>Land Fill</i>		
5. NAME OF DRILLER <i>Red Keen</i>			6. MANUFACTURERS DESIGNATION OF DRILL <i>54 LT</i>		
7. SIZE AND TYPE OF (DRILLING) AND SAMPLING EQUIPMENT		8. HOLE LOCATION			
		9. SURFACE ELEVATION			
		10. DATE STARTED <i>11-10-04</i>		11. DATE COMPLETED <i>11-10-04</i>	
12. OVERBURDEN THICKNESS		13. DEPTH GROUNDWATER ENCOUNTERED			
13. DEPTH (DRILED) INTO ROCK		14. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
14. TOTAL DEPTH OF HOLE <i>10'</i>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
18. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED	
		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
19. TOTAL NUMBER OF CORE BOXES		20. SAMPLES FOR CHEMICAL ANALYSIS			
		<i>5</i> VOC		METALS	
		<input checked="" type="checkbox"/>		OTHER (SPECIFY) <i>EXPLOSIVES</i>	
21. DISPOSITION OF HOLE		BACKFILLED		MONITORING WELL	
		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
		OTHER (SPECIFY)		23. SIGNATURE OF INSPECTOR <i>J. Hansen</i>	
				21. TOTAL CORE RECOVERY	

LOCATION SKETCH/COMMENTS

SCALE:



PROJECT <i>RVAAP 14</i>	HOLE NO. <i>LNWSb-066</i>
----------------------------	------------------------------

HTRW DRILLING LOG (CONTINUATION SHEET)						HOLE NUMBER LNWSB-066	
PROJECT RVAAP 12			INSPECTOR Shahram Taneshnia			SHEET OF SHEETS	
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	BLOW COUNT RECORDS (G)	REMARKS (H)
	0.0	TOP SOIL					
	1	10YR 4/4 silty sand 60% sand, 30% silt, wet soft	1.0			0.5	
	2		1.9			0.5	
	3						
	4		2.3		*	0.5	
	5						
	6	10YR 4/3 stiff moist silt 60% sand 30% clay 10%	1.7			2.0	
	7						
	8	2.5YR 5/1 stiff moist silt with some clay	1.6			2.0	
	9						
	10	2.5YR 5/1 stiff moist silt 80% clay 20%					

PROJECT RVAAP 12	TID = 10'	HOLE NO. LNWSB-066
---------------------	-----------	-----------------------

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

1415 LNWSB-066 4-6'

Field Sampling Report

Location ID: LAW 56-067-50

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 11-10-04

Sampling Information

Source	Groundwater / Product	Surface Water	Soils / Sediments / Sludge		
Method	Bailer	Sample Bottle	Scoop		Trowel
	Pump	Bacon Bomb	Bowl		Hand Auger
			Push Probe		Plastic Liner
Type/Construction			Mattocks		Geo Probe <input checked="" type="checkbox"/>
Miscellaneous	Well Purging Form Yes - No				

Sample Collection: 134 hrs

Sample Type: Composite - MI - Grab
If MI, # of increments taken: _____

Location: Plotted on Map - Staked in Field
Estimated - Measured - Surveyed

Sample Depth: 6-8 FT (below surface)

Decont: Dedicated Each Day - Each Location

Field Parameters (at time of sample)	Analytical Parameters			Other Parameters		
PID / FID Readings: Background: <u>0.0</u> ppm <u>2.4</u>	VOC		TPH GRO	Corrosivity		
	SVOC	<input checked="" type="checkbox"/>	TPH DRO	Reactivity Sulfide/Cyanide		
	Explosives	<input checked="" type="checkbox"/>	Chromium +6	Ignitability		
Sample: _____ ppm	Propellants		Nitrate			
Water Level _____ FT	TAL Metals	<input checked="" type="checkbox"/>		QA Samples		
Temperature _____ °C	Pesticides/PCBs			MS/MSD	Yes / No	NA
Sp. Conductance: _____ uMHOs	Cyanides			Duplicate ID		NA
pH _____ units	TOC			Equipment Rinse ID		NA
Turbidity _____ N.T.U.	Grain Size			Trip Blank ID		NA

Sample Description

no odor, no staining
two diff color 10YR 4/6
2.5 YR 5/1
wet, well sorted, non plastic
silt 90 %
clay 10 %

Split Sample

Split Sample ID: _____

Name: _____
Agency/Company: _____
Address: _____

QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
Parameters: Same as Above - As Listed

Soil sample description should include:

Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:

Color Odor Sheen Turbidity

Logged By: Shalwan Taherania (Please Print)

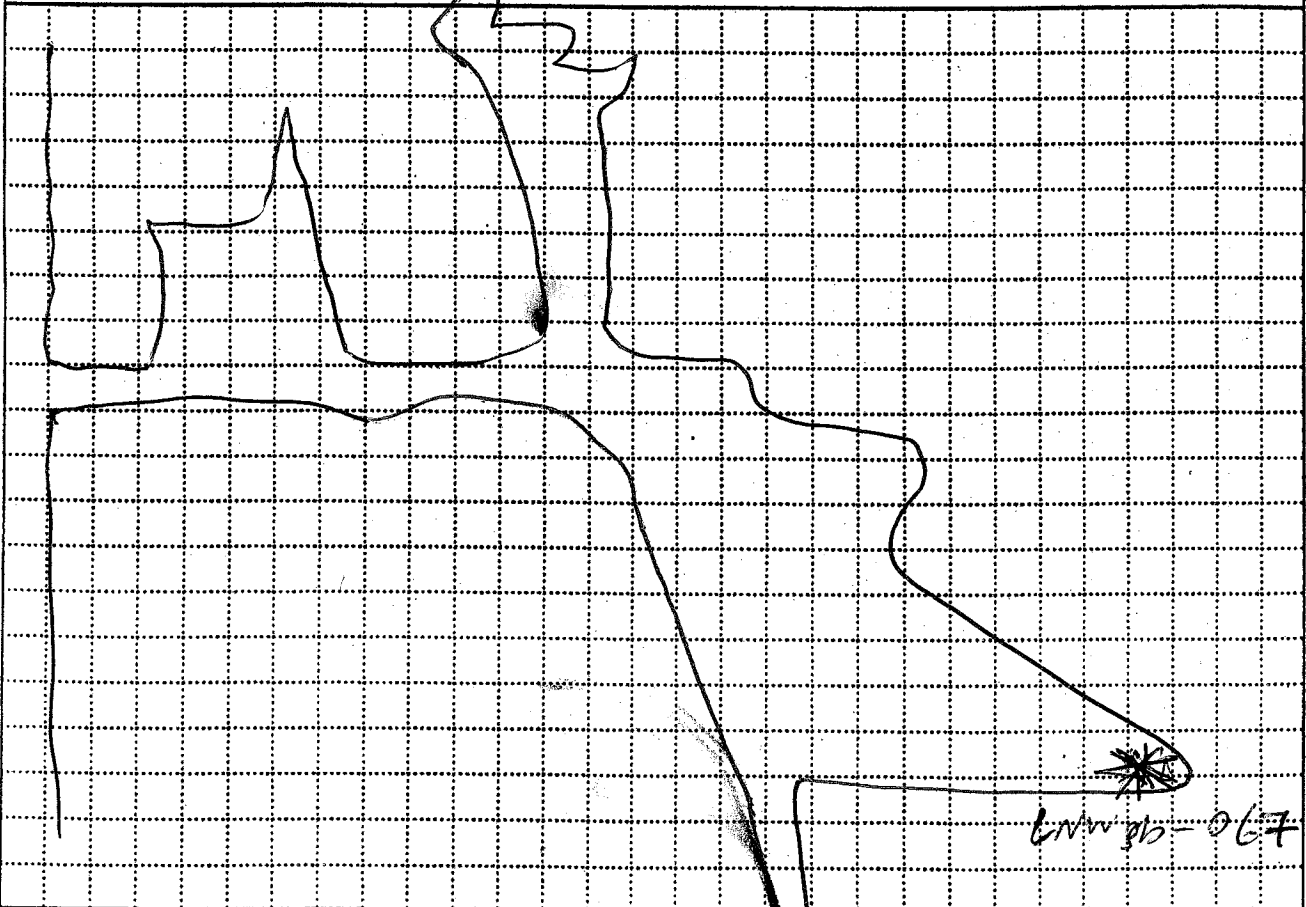
Reviewed by: ERIC ELLS (Please Print)

Signature: [Signature]

Signature: [Signature] Date: 2/1/05

HTRW DRILLING LOG		DISTRICT		HOLE NUMBER LNWSB-067	
1. COMPANY NAME MKN		2. DRILL SUBCONTRACTOR AST		SHEET SHEETS 1 of 1	
3. PROJECT RVAAP 14			4. LOCATION Landfill		
5. NAME OF DRILLER Ted Keen			6. MANUFACTURER'S DESIGNATION OF DRILL 54 LT		
7. SIZE AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION		9. SURFACE ELEVATION	
		10. DATE STARTED 10-11-04		11. DATE COMPLETED 10-11-04	
12. OVERBURDEN THICKNESS		15. DEPTH GROUNDWATER ENCOUNTERED			
13. DEPTH DRILLED INTO ROCK		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
14. TOTAL DEPTH OF HOLE 10'		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
18. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED	
				19. TOTAL NUMBER OF CORE BOXES	
20. SAMPLES FOR CHEMICAL ANALYSIS		S VOC		METALS	
		✓		OTHER (SPECIFY) Explosives	
22. DISPOSITION OF HOLE		BACKFILLED		MONITORING WELL	
				OTHER (SPECIFY)	
				23. SIGNATURE OF INSPECTOR <i>[Signature]</i>	

LOCATION SKETCH/COMMENTS SCALE:



PROJECT RVAAP 14	HOLE NO. LNWSB-067
---------------------	-----------------------

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

LNWSB-067

PROJECT

RVAAP 14

INSPECTOR

Shahram Taherinia

SHEET

1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NOS. (F)	BLOW-COUNT (G)	REMARKS (H)
	0.0	TOP SOIL					
	1	10YR 3/6, med stiff moist silt 70%, sand 15%, clay 15%	1.5			1.8	
	2		1.3			1.8	
	3						
	4	10YR 4/6 wet soft 85% silt 15% clay	1.2			2.0	very wet silt at 3.2'
	5						
	6		2.4		*	2.0	
	7						
	8	2.5YR 5/1 very wet soft silt with some clay silt 90% clay 10%	1.3			2.0	very wet silt at 7.2'
	9						

PROJECT

RVAAP 14

TD = 10'

HOLE NO.

LNWSB-067

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

1340 LNWSB-067 6-8

Field Sampling Report

Location ID: LNWSB-068-50

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 11-10-04

Sampling Information

Source	Groundwater / Product	Surface Water	<u>Soils</u> / Sediments / Sludge		
Method	Bailer	Sample Bottle	Scoop		Trowel
	Pump	Bacon Bomb	Bowl		Hand Auger
			Push Probe		Plastic Liner
Type/Construction			Mattocks		Geoprobe <input checked="" type="checkbox"/>
Miscellaneous	Well Purging Form Yes - No				

Sample Collection: 4-45 hrs

Sample Type: Composite - MI - Grab
If MI, # of increments taken: _____

Location: Plotted on Map - Staked in Field
Estimated - Measured - Surveyed

Sample Depth: 2-4 FT (below surface)

Decon: ~~Dedicated~~ - Each Day - Each Location

Field Parameters (at time of sample)	Analytical Parameters			Other Parameters		
PID / FID Readings: Background: <u>0.0</u> ppm <u>2.3</u> ppm	VOC		TPH GRO	Corrosivity		
	SVOC	<input checked="" type="checkbox"/>	TPH DRO	Reactivity Sulfide/Cyanide		
	Explosives	<input checked="" type="checkbox"/>	Chromium +6	Ignitability		
Sample: _____ ppm	Propellants		Nitrate			
Water Level _____ FT	TAL Metals	<input checked="" type="checkbox"/>		QA Samples		
Temperature _____ °C	Pesticides/PCBs			MS/MSD	Yes / No	NA
Sp. Conductance: _____ uMHOs	Cyanides			Duplicate ID		NA
pH _____ units	TOC			Equipment Rinse ID		NA
Turbidity _____ N.T.U.	Grain Size			Trip Blank ID		NA

Sample Description

10yr 3/4 wet, soft
no odor, no staining, nonplastic
wet, sand with some silt

Split Sample

Split Sample ID: _____
Name: _____
Agency/Company: _____
Address: _____

QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
Parameters: Same as Above - As Listed

Soil sample description should include:

Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:

Color Odor Sheen Turbidity

Logged By: Shahram Taheri (Please Print)

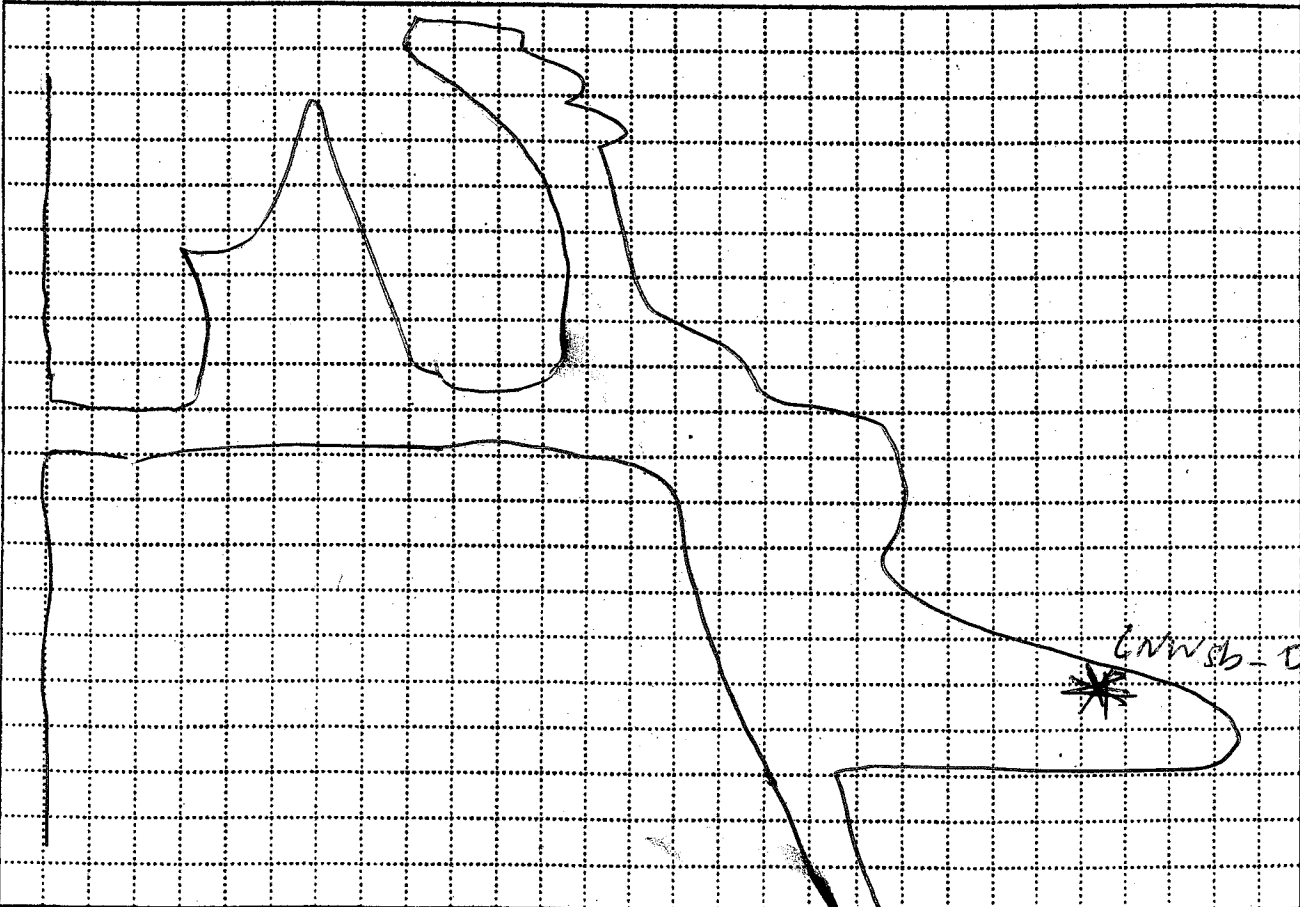
Reviewed by: FRIC EWIS (Please Print)

Signature: [Signature]

Signature: [Signature] Date: 2/1/05

HTRW DRILLING LOG		DISTRICT		HOLE NUMBER LNWSb-068	
1. COMPANY NAME MKN		2. DRILL SUBCONTRACTOR AST		SHEET SHEETS 1 of 1	
3. PROJECT RVAAP 14			4. LOCATION Landfill		
5. NAME OF DRILLER Ted Keen			6. MANUFACTURERS DESIGNATION OF DRILL 54 LT		
7. SIZE AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION			
		9. SURFACE ELEVATION			
		10. DATE STARTED 11-10-04		11. DATE COMPLETED 11-10-04	
12. OVERBURDEN THICKNESS		13. DEPTH GROUNDWATER ENCOUNTERED			
13. DEPTH DRILLED INTO ROCK		14. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
14. TOTAL DEPTH OF HOLE 10'		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
18. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED	
				19. TOTAL NUMBER OF CORE BOXES	
20. SAMPLES FOR CHEMICAL ANALYSIS		3 VOC		METALS	
				OTHER (SPECIFY) Explosives	
21. DISPOSITION OF HOLE		BACK-FILLED		MONITORING WELL	
				OTHER (SPECIFY)	
		23. SIGNATURE OF INSPECTOR			

LOCATION SKETCH/COMMENTS SCALE:



PROJECT RVAAP 14	HOLE NO. LNWSb-068
---------------------	-----------------------

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER
LNWSB-068
SHEET 1 OF 1 SHEETS

PROJECT RVAAP 14

INSPECTOR Shahram Taherinia

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT Retains	REMARKS (g)
	2.0	TOP SOIL					
	1	10YR 3/3 wet soft sand with some silt	1-2			0.5	
	2	10YR 3/4 wet soft sand with some silt	2-3		*	0.5	
	3						
	4		1.8			1.5	
	5						
	6		1.9			2.0	
	7	10YR 4/6 wet soft silt with some clay					
	8		2.0			2.0	
	9	2.5YR 5/1 wet soft silt with some clay					
	10						

PROJECT RVAAP 14

TD=10'

HOLE NO. LNWSB-068

1445 LNWSB-068

Location ID: LNWSB-069-50

Field Sampling Report

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 11-10-04

Sampling Information

Source	Groundwater / Product	Surface Water	Soils / Sediments / Sludge	
Method	Bailer	Sample Bottle	Scoop	Trowel
	Pump	Bacon Bomb	Bowl	Hand Auger
			Push Probe	Plastic Liner
Type/Construction			Mattocks	Creep probe X
Miscellaneous	Well Purging Form Yes - No			

Sample Collection: 1515 hrs

Sample Type: Composite - MI - Grab
If MI, # of increments taken: _____

Location: Plotted on Map - Staked in Field
Estimated - Measured - Surveyed

Sample Depth: 2-4 FT (below surface)

Decon: Dedicated > Each Day - Each Location

Field Parameters (at time of sample)	Analytical Parameters			Other Parameters		
PID / FID Readings: Background: <u>0.0</u> ppm <u>2.5</u>	VOC		TPH GRO	Corrosivity		
	SVOC	X	TPH DRO	Reactivity Sulfide/Cyanide		
	Explosives	X	Chromium +6	Ignitability		
Sample: _____ ppm	Propellants		Nitrate			
Water Level _____ FT	TAL Metals	X		QA Samples		
Temperature _____ °C	Pesticides/PCBs			MS/MSD	Yes / No	NA
Sp. Conductance: _____ uMHOs	Cyanides			Duplicate ID		NA
pH _____ units	TOC			Equipment Rinse ID		NA
Turbidity _____ N.T.U.	Grain Size			Trip Blank ID		NA

Sample Description

10YR 4/4, no odor
no staining, wet, soft
non plastic, well sorted
silt 75%
sand 10%
clay 15%

Split Sample

Split Sample ID: _____

Name: _____
Agency/Company: _____
Address: _____

QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
Parameters: Same as Above - As Listed

Soil sample description should include:

Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:

Color Odor Sheen Turbidity

Logged By: Shahram Taherian (Please Print)

Reviewed by: ERIC ELLS (Please Print)

Signature: [Signature]

Signature: [Signature] Date: 2/1/05

HTRW DRILLING LOG		DISTRICT		HOLE NUMBER LNWSB-069	
1. COMPANY NAME MKM		2. DRILL SUBCONTRACTOR AST		SHEET SHEETS 1 OF 1	
3. PROJECT RVAAP 14		4. LOCATION Land Fill			
5. NAME OF DRILLER Ted Keen		6. MANUFACTURERS DESIGNATION OF DRILL 54 HT			
7. SIZE AND TYPE OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION			
		9. SURFACE ELEVATION			
		10. DATE STARTED 11-10-04		11. DATE COMPLETED 11-10-04	
12. OVERBURDEN THICKNESS		13. DEPTH GROUNDWATER ENCOUNTERED			
13. DEPTH DRILLED INTO ROCK		14. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
14. TOTAL DEPTH OF HOLE 10'		15. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
16. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED	
				19. TOTAL NUMBER OF CORE BOXES	
20. SAMPLES FOR CHEMICAL ANALYSIS		S VOC	METALS	OTHER (SPECIFY) Explosives	OTHER (SPECIFY)
		✓	✓		11. TOTAL CORE RECOVERY %
22. DISPOSITION OF HOLE		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <i>J. Hall</i>
LOCATION SKETCH/COMMENTS		SCALE:			
PROJECT RVAAP 14		HOLE NO. LNWSB-069			

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER
LNWSB-069

PROJECT

RVAAP

INSPECTOR

Shahram Taherina

SHEET

1 OF 9 SHEETS

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	BLOW COUNT (G)	REMARKS (H)
	0.0	TOP SOIL	1.6			0.5	
	1	10YR 4/6 wet, soft sand					
	2		2.5			2.5	
	3	10YR 4/4 wet soft silt 75%, sand 10%, clay 15%					
	4		0.9			2.0	
	5						
	6	10YR 4/6 wet, soft sand 60%, silt 30%, clay 10%	1.6			2.0	
	7						
	8	10YR 4/4 wet, soft silt 75%, sand 20%, clay 5%	1.8			2.0	
	9						
	10	10YR 4/6 wet soft sand with some silt					

PROJECT

RVAAP 14

TD = 10'

HOLE NO.

LNWSB-069

1515 LNWSB-069

2-4

Field Sampling Report

Location ID: LNWSb-070

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 11-10-04

Sampling Information

Source	Groundwater / Product	Surface Water	Soils / Sediments / Sludge	
Method	Bailer	Sample Bottle	Scoop	Trowel
	Pump	Bacon Bomb	Bowl	Hand Auger
			Push Probe	Plastic Liner
Type/Construction			Mattocks	
Miscellaneous	Well Purging Form Yes - No			

Sample Collection: _____ hrs

Sample Type: Composite - MI - Grab
If MI, # of increments taken: _____

Location: Plotted on Map - Staked in Field
Estimated - Measured - Surveyed

Sample Depth: _____ FT (below surface)

Decon: Dedicated - Each Day - Each Location

Field Parameters (at time of sample)	Analytical Parameters			Other Parameters					
PID / FID Readings: Background: ppm	VOC		TPH GRO	Corrosivity					
	SVOC		TPH DRO	Reactivity Sulfide/Cyanide					
	Explosives		Chromium +6	Ignitability					
Sample: ppm	Propellants		Nitrate						
Water Level FT	TAL Metals			QA Samples					
Temperature °C	Pesticides/PCBs						MS/MSD	Yes / No	NA
Sp. Conductance: µMHOs	Cyanides						Duplicate ID		NA
pH units	TOC						Equipment Rinse ID		NA
Turbidity N.T.U.	Grain Size			Trip Blank ID		NA			

Sample Description

NO SAMPLE TAKEN

Soil sample description should include:

Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:

Color Odor Sheen Turbidity

Split Sample

Split Sample ID: _____
Name: _____
Agency/Company: _____
Address: _____

QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
Parameters: Same as Above - As Listed

Logged By: Sue Bales (Please Print)

Reviewed by: Kaizad Wadia (Please Print)

Signature: [Signature]

Signature: K.D. Wadia Date: 2/1/05

HTRW DRILLING LOG		DISTRICT		HOLE NUMBER	
1. COMPANY NAME MKM		2. DRILL SUBCONTRACTOR AST		LWNSb-070	
3. PROJECT RVAAP		4. LOCATION Land fill		SHEET SHEETS 1 of 1	
5. NAME OF DRILLER Ted Keen		6. MANUFACTURERS DESIGNATION OF DRILL		7. HOLE LOCATION	
8. HOLE LOCATION		9. SURFACE ELEVATION		10. DATE STARTED 11-10-94	
11. DATE COMPLETED 11-10-94		12. OVERBURDEN THICKNESS		13. DEPTH GROUNDWATER ENCOUNTERED	
13. DEPTH (DILLED) INTO ROCK		14. TOTAL DEPTH OF HOLE		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)		18. GEOTECHNICAL SAMPLES		19. TOTAL NUMBER OF CORE BOXES	
DISTURBED		UNDISTURBED		20. SAMPLES FOR CHEMICAL ANALYSIS	
S VOC		METALS		OTHER (SPECIFY)	
OTHER (SPECIFY)		OTHER (SPECIFY)		OTHER (SPECIFY)	
21. TOTAL CORE RECOVERY		22. DISPOSITION OF HOLE		23. SIGNATURE OF INSPECTOR	
BACKFILLED		MONITORING WELL		OTHER (SPECIFY)	
LOCATION SKETCH/COMMENTS		SCALE:			
PROJECT				HOLE NO.	

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

CWWSB-070

PROJECT

RVAAP 14

INSPECTOR

Shahram Taherinia

SHEET

SHEETS

OF

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	BLOW COUNT (G)	REMARKS (H)
	0.0	TOP SOIL					
	1	10YR 4/4 moist silt 70% sand 20% clay 10% ML	0.4			1.2	
	2	Silty sand sandy silt	0.6			1.2	
	3	10YR 3/6, moist sand 80% silt 15% clay 5%					
	4		0.6			1.4	
	5	10YR 4/4 soft moist, silt 60% sand 40%					
	6		0.4			1.4	
	7						
	8	10YR 3/6 soft wet, sand 70% silt 20% clay 10%	0.3			1.8	
	9						
	10.0						

PROJECT

RVAAP

HOLE NO.

CWWSB-070

Field Sampling Report

Location ID: ATA sb-001-50

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 08 Nov 04

Sampling Information

Source	Groundwater / Product	Surface Water	<u>Soils / Sediments / Sludge</u>		
Method	Bailer	Sample Bottle	Scoop		Trowel
	Pump	Bacon Bomb	Bowl		Hand Auger X
			Push Probe		Plastic Liner X
Type/Construction			Mattocks		
Miscellaneous	Well Purging Form Yes / No				

Sample Collection: 1200 hrs Sample Type: Composite - (MI) (Gwb) #15 11/8/04
 If MI, # of increments taken: 5 Location: Plotted on Map - Staked in Field
 Sample Depth: 1-3 FT (below surface) Decon: Dedicated - Each Day Each Location
 Estimated - Measured - Surveyed

Field Parameters (at time of sample)	Analytical Parameters			Other Parameters		
PID / FID Readings: Background: <u>0.0</u> ppm	VOC		TPH GRO	Corrosivity		
	SVOC		TPH DRO	Reactivity Sulfide/Cyanide		
	Explosives	✓	Chromium +6	Ignitability		
Sample: <u>0.0</u> ppm	Propellants		Nitrate	QA Samples MS/MSD Yes / No NA Duplicate ID NA Equipment Rinse ID NA Trip Blank ID NA		
Water Level	TAL Metals	✓				
Temperature	Pesticides/PCBs					
Sp. Conductance:	Cyanides					
pH	TOC					
Turbidity	Grain Size					

Sample Description

No odor, No staining
7.5 YR 3/4, moist, poorly sorted
non plastic, silt 65%, sand 15%
clay 20%

Split Sample

Split Sample ID: _____
 Name: _____
 Agency/Company: _____
 Address: _____

 QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
 Parameters: Same as Above - As Listed

Soil sample description should include:

Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:

Color Odor Sheen Turbidity

Logged By: Michael James (Please Print)

Reviewed by: ERIC ELIS (Please Print)

Signature: Michael James

Signature: [Signature] Date: 2/2/05

Field Sampling Report

Location ID: ATAsb-002-50

Ravenna Army Ammunition Plant
Characterization of 14 RVAAP AOCs

Date: 08 Nov 04

Sampling Information

Source	Groundwater / Product	Surface Water	Soils / Sediments / Sludge		
Method	Bailer	Sample Bottle	Scoop	Trowel	
	Pump	Bacon Bomb	Bowl	Hand Auger	X
			Push Probe	Plastic Liner	X
Type/Construction			Mattocks		
Miscellaneous	Well Purging Form Yes - No				

Sample Collection: 1230 hrs

Sample Type: Composite - MI - Grab
If MI, # of increments taken: 5

Location: Plotted on Map - Staked in Field
Estimated - Measured - Surveyed

Sample Depth: 3-5 FT (below surface)

Decon: Dedicated - Each Day - Each Location

Field Parameters (at time of sample)	Analytical Parameters			Other Parameters		
PID / FID Readings: Background: <u>0.0</u> ppm	VOC		TPH GRO	Corrosivity		
	SVOC		TPH DRO	Reactivity Sulfide/Cyanide		
	Explosives	✓	Chromium +6	Ignitability		
Sample: <u>0.0</u> ppm	Propellants		Nitrate			
Water Level: <u> </u> FT	TAL Metals	✓		QA Samples		
Temperature: <u> </u> °C	Pesticides/PCBs			MS/MSD	Yes / No	NA
Sp. Conductance: <u> </u> uMHOs	Cyanides			Duplicate ID		NA
pH: <u> </u> units	TOC			Equipment Rinse ID		NA
Turbidity: <u> </u> N.T.U.	Grain Size			Trip Blank ID		NA

Sample Description
No odor, No staining
10YR 4/4, moist, well sorted
non plastic, sand 95% with
some silt

Soil sample description should include:
Munsell Color Odor Staining Texture Sorting Plasticity Moisture

Water sample description should include:
Color Odor Sheen Turbidity

Split Sample

Split Sample ID: _____

Name: _____

Agency/Company: _____

Address: _____

QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks
Parameters: Same as Above - As Listed

Logged By: Michael J. Smith (Please Print)

Signature: Michael J. Smith

Reviewed by: ERIC EUS (Please Print)

Signature: [Signature] Date: 2/2/05



Appendix B

Rare Species

General

RAVENNA TRAINING AND LOGISTICS SITE (RTLS)
RAVENNA ARMY AMMUNITION PLANT (RVAAP)
RARE SPECIES LIST
9 May 2005

I. Species confirmed to be on the RTLS/RVAAP property by biological inventories and confirmed sightings.

A. State Endangered

1. American bittern, *Botaurus lentiginosus* (migrant)
2. Northern harrier, *Circus cyaneus*
3. Yellow-bellied Sapsucker, *Sphyrapicus varius*
4. Golden-winged warbler, *Vermivora chrysoptera*
5. Osprey, *Pandion haliaetus* (migrant)
6. Trumpeter swan, *Cygnus buccinator* (migrant)
7. Mountain Brook Lamprey, *Ichthyomyzon greeleyi*
8. Graceful Underwing, *Catocala gracilis*
9. Ovate Spikerush, *Eleocharis ovata* (Blunt spike-rush)
10. Tufted Moisture-loving Moss, *Philonotis fontana* var. *caespitosa*
11. Bobcat, *Felis rufus*

B. State Threatened

1. Barn owl, *Tyto alba*
2. Dark-eyed junco, *Junco hyemalis* (migrant)
3. Hermit thrush, *Catharus guttatus* (migrant)
4. Least bittern, *Ixobrychus exilis*
5. Lest flycatcher, *Empidonax minimus*
6. *Psilotreta indecisa* (caddisfly)
7. Simple willow-herb, *Epilobium strictum*
8. Woodland Horsetail, *Equisetum sylvaticum*

C. State Potentially Threatened Plants

1. Pale sedge, *Carex pallescens*
2. Gray Birch, *Betula populifolia*
3. Butternut, *Juglans cinerea*
4. Northern rose azalea, *Rhododendron nudiflorum* var. *roseum*
5. Hobblebush, *Viburnum alnifolium*
6. Long Beech Fern, *Phegopteris connectilis*
7. Straw sedge, *Carex straminea*
8. Water avens, *Geum rivale*
9. Tall St. John's wort, *Hypericum majus*
10. Swamp oats, *Sphenopholis pensylvanica*
11. Shinning ladies'-tresses, *Spiranthes lucida*
12. Arbor Vitae, *Thuja occidentalis*
13. American Chestnut, *Castanea dentata*

D. State Species of Concern

1. Pygmy shrew, *Sorex hovi*
2. Star-nosed mole, *Condylura cristata*
3. Woodland jumping mouse, *Napaeozapus insignis*
4. Sharp-shinned hawk, *Accipiter striatus*
5. Marsh wren, *Cistothorus palustris*

6. Henslow's sparrow, *Ammodramus henslowii*
7. Cerulean warbler, *Dendroica cerulea*
8. Prothonotary warbler, *Protonotaria citrea*
9. Bobolink, *Dolichonyx oryzivorus*
10. Northern bobwhite, *Colinus virginianus*
11. Common moorhen, *Gallinula chloropus*
12. Great egret, *Casmerodius albus*
13. Sora, *Porzana carolina*
14. Virginia Rail, *Rallus limicola*
15. Creek heelsplitter, *Lasmigona compressa*
16. Eastern box turtle, *Terrapene carolina*
17. Four-toed Salamander, *Hemidactylium scutatum*
18. *Stenonema ithica* (mayfly)
19. *Apamea mixta* (moth)
20. *Brachylomia algens* (moth)

E. State Special Interest

1. Canada warbler, *Wilsonia canadensis*
2. Little blue heron, *Egretta caerulea*
3. Magnolia warbler, *Dendroica magnolia*
4. Northern waterthrush, *Seiurus noveboracensis*
5. Winter wren, *Troglodytes troglodytes*
6. Back-throated blue warbler, *Dendroica caerulescens*
7. Brown creeper, *Certhia americana*
8. Mourning warbler, *Oporornis philadelphia*
9. Pine siskin, *Carduelis pinus*
10. Purple finch, *Carpodacus purpureus*
11. Red-breasted nuthatch, *Sitta canadensis*
12. Golden-crowned kinglet, *Regulus satrapa*
13. Blackburnian warbler, *Dendroica fusca*
14. Blue grosbeak, *Guiraca caerulea*
15. Common snipe, *Gallinago gallinago*
16. American wigeon, *Anas americana*
17. Gadwall, *Anas strepera*
18. Green-winged teal, *Anas crecca*
19. Northern shoveler, *Anas clypeata*
20. Redhead duck, *Aythya americana*
21. Ruddy duck, *Oxyura jamaicensis*
23. *Pohlia elongata* var. *elongata* (No Common Name, Bryophyte)

F. Rare Plant Communities/Significant Natural Areas

1. The area known as the northern woods contains Beech-sugar maple forest, oak-maple swamp forest, mixed swamp forest, oak-maple-tulip forest, oak-hickory forest, mixed floodplain forest, and successional woods, floating-leaved marsh, submergent marsh, emergent marsh, cat-tail marsh, sedge-grass meadow, mixed shrub swamp, buttonbush swamp, shrub bog, wet fields, ponds, and disturbed wetlands. This area is approximately 1,500 acres and includes a Pin Oak-Swamp White Oak-Red Maple-(Northern Pin Oak) Flatwoods Forest. This community is ranked as a G2 community. This means that it is "imperiled globally because rarity (6 to 20 occurrences or few remaining individuals) or because of some factor(s) making it very vulnerable to extinction throughout its range." According to Dr. Barbara Andreas, who did the RTLS plant communities inventory, the best examples of this community in NE Ohio are at RTLS. This area also contains good examples of Beech-Maple Forests (G4?).

2. The Wadsworth Glenn contains the following communities Hemlock-White Pine-Northern Hardwood Forest (G3/G4), oak-hickory forest, mixed floodplain forest, floating-leaved marsh, submergent marsh, emergent marsh, cat-tail marsh, and ponds. This area is approximately 90 acres.

3. The Group 3 woods is approximately 700 acres and contains mixed swamp forest, beech-sugar maple forest, oak-maple-tuliptree forest, red maple woods, successional woods, cat-tail marsh, and disturbed habitats.

4. The B&O Wye Road area contains Sphagnum thicket, oak-maple swamp forest, mixed swamp forest, dry fields, buttonbush swamp, wet meadows, cat-tail marsh, a pond, and seeps. This area consists of approximately 145 acres and is on the southeastern perimeter in Portage County on the Portage and Trumbull County line.

5. The South Patrol Road swamp forest is about 120 acres and contains mixed swamp forest, oak-maple swamp forest, beech-maple forest, buttonbush swamp, and open swamps.

G. Other Biological Items of Interest

1. Turkey Vulture Roosts - Turkey Vultures roost and breed throughout the RVAAP, primarily on and around earth covered magazine headwalls and abandoned buildings.

2. Great Blue Heron - Up to three heron rookeries have been identified at the RVAAP in a given year. The rookeries are normally small and are abandoned for better areas from time to time.

NOTE: There are currently NO FEDERALLY listed species or critical habitat on the RTLS/RVAAP property.