

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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DISCRETE SURFACE SOIL SAMPLES

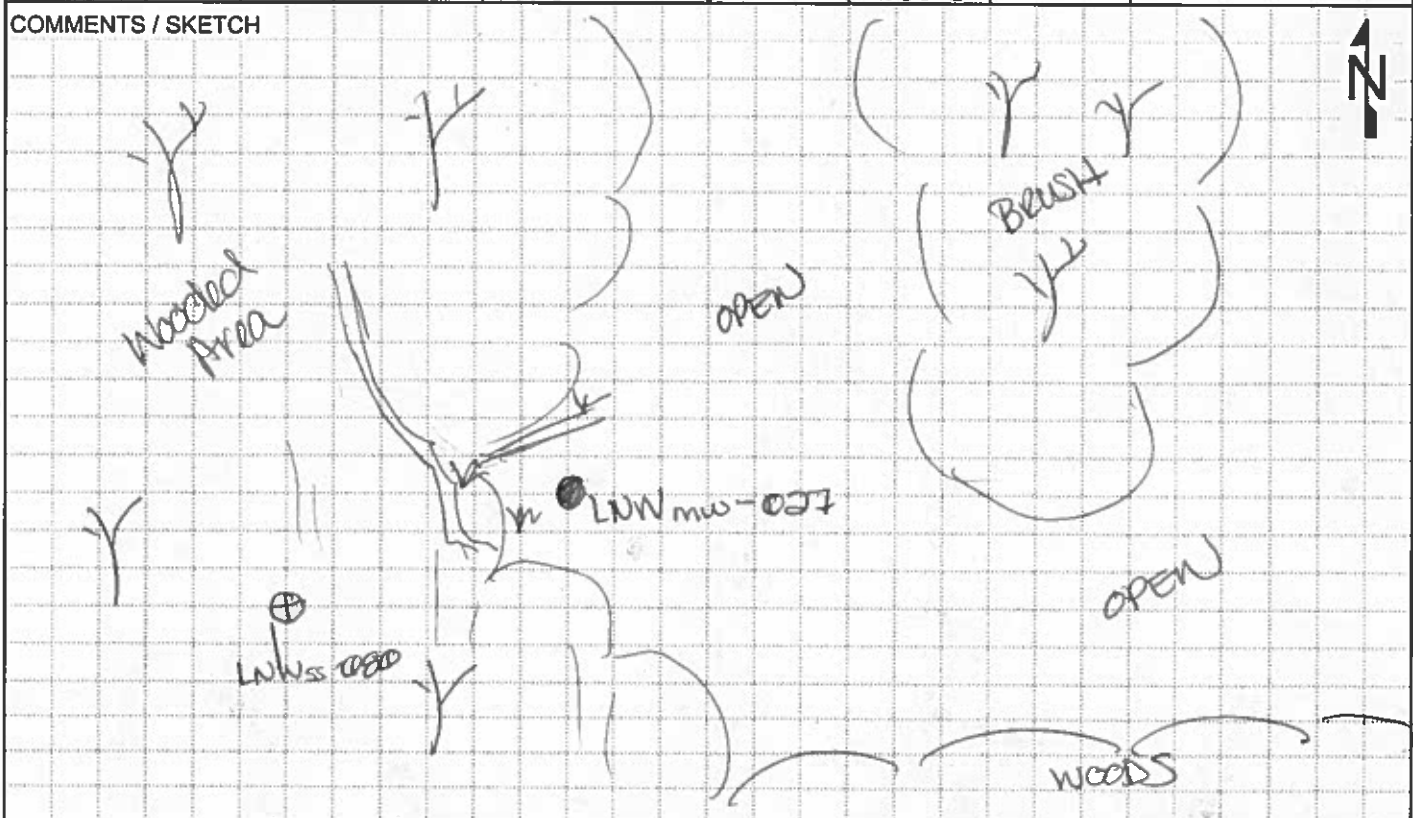
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HTRW DRILLING LOG		DISTRICT USACE - Louisville	BOREHOLE NUMBER LNW _{SS} -080
1. COMPANY NAME SAIC		2. DRILLING SUBCONTRACTOR NA	SHEET 1 OF 1

3. PROJECT RVAAP - PBA08 RI		4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266	
5. NAME OF DRILLER EMILY CUMMINGS		6. DIRECTION OF BOREHOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED DEGREES	

7. NOTES PID MAKE/MODEL: _____		PID SERIAL#: _____		Colors from Munsell Soil Color Chart, Rev
WATER LEVEL MAKE/MODEL: _____		WATER LEVEL SERIAL#: _____		1994

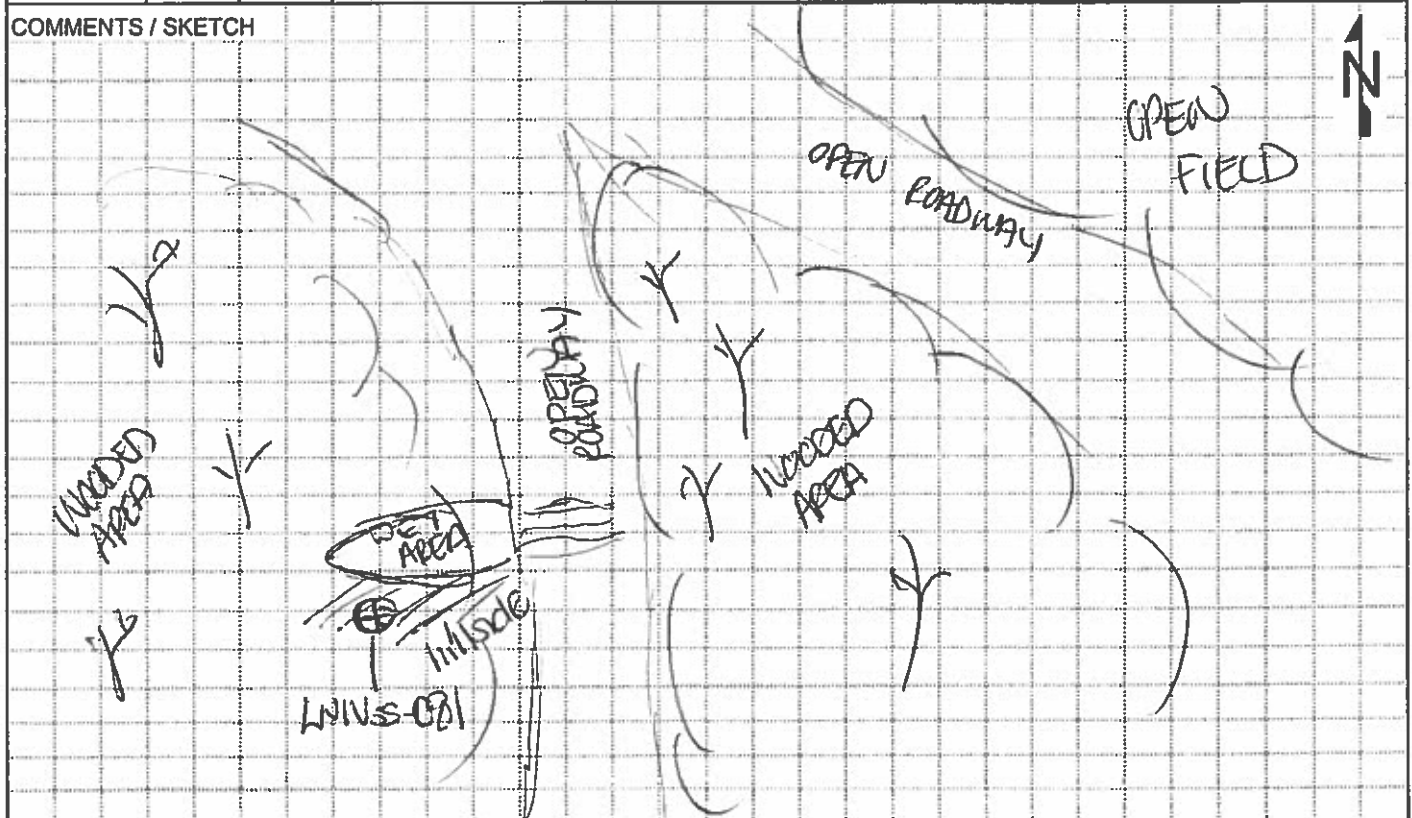
ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	SPT DATA RECOVERY (0.5 Feet)	MONITORING (PPM/CPM)	REMARKS (Sample IDs/Depths/Core Box/Etc.)
		ML	SAND ^{EC 4/1/10} Sandy SILT (ML); trace Gravel; Brown (7.5YR4/1); Soft; moist; non-plastic; trace organics (roots, leaves).	1.0 / 1.0	NA	0910 : 04/01/2010 Collected: LNW _{SS} -080-5290-S0 FOR HEXAVALENT CHROMIUM AND TOTAL CHROMIUM.
			<i>EC 4/1/10</i>		<i>EC 4/1/10</i>	<i>EC 4/1/10</i>
BORE HOLE TERMINATED AT 1' BEAS BORING COMPLETE USING A 3" SS HAND AUGER						



GEOLOGIST SIGNATURE/DATE Emily Cummings 4/01/2010	QA/QC SIGNATURE/DATE Steve Vief 4/16/10	BOREHOLE NUMBER LNW _{SS} -080
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HTRW DRILLING LOG (continued)		DISTRICT USACE - Louisville	BOREHOLE NUMBER LW55-481
1. COMPANY NAME SAIC		2. DRILLING SUBCONTRACTOR NA	
3. PROJECT RVAAP ROAD R1		4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266	
5. NAME OF DRILLER Emily Cunningham		6. DIRECTION OF BOREHOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED DEGREES	
7. NOTES PID MAKE/MODEL: NA WATER LEVEL MAKE/MODEL: NA		PID SERIAL#: NA WATER LEVEL SERIAL#: NA Colors from Munsell Soil Color Chart, Rev 1994	

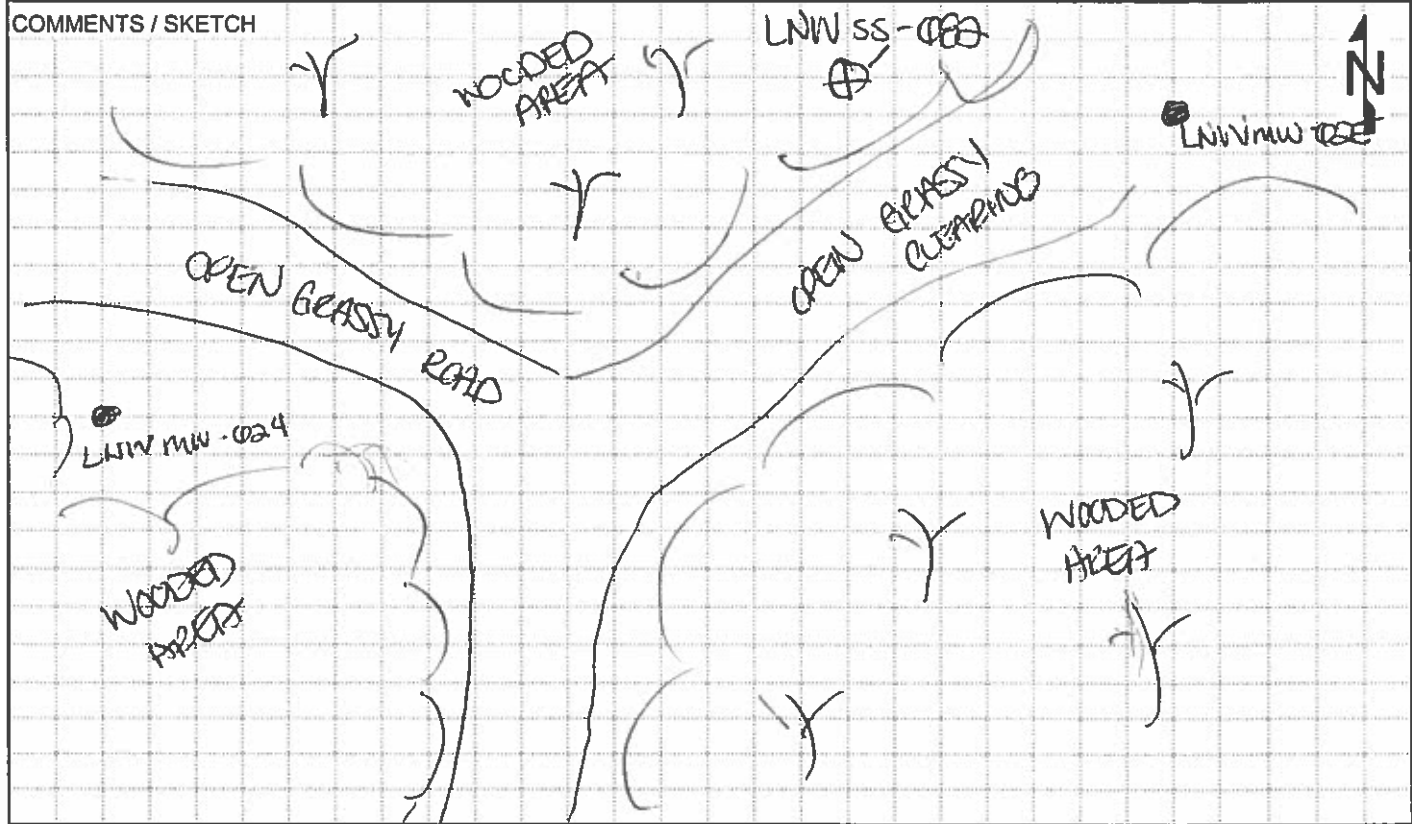
ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	SPT DATA (0.5 Feet)	MONITORING (PPM/CPM)	REMARKS (Sample IDs/Depths/Core Box/Etc.)
		ML	SILT (ML), Little Sand, Trace Clay, Grayish Brown 10YR 5/2. Soft, Damp, medium plasticity, mottled silty brown 7.5YR 5/3 Infilled root casts. Gray 6/1.	Hand Auger 4-1	NA	1545 LW55-481-5280-50 for Total Cr + Hex Cr.
				5/ 5 1/2 in	5/ 5 1/2 in	5/ 5 1/2 in
						Terminated Boring at 1' BG BORING COMPLETE USING A 3" SS HAND AUGER



GEOLOGIST SIGNATURE/DATE J.C. [Signature] 3/31/10	QA/QC SIGNATURE/DATE Emily Cunningham 3/31/10	BOREHOLE NUMBER LW55-481
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HTRW DRILLING LOG (continued)		DISTRICT USACE - Louisville	BOREHOLE NUMBER LWSS-082
1. COMPANY NAME SAIC		2. DRILLING SUBCONTRACTOR NA	
3. PROJECT RVAAP PBA02RI		4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266	
5. NAME OF DRILLER Emily Cunningham		6. DIRECTION OF BOREHOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED DEGREES	
7. NOTES PID MAKE/MODEL: NA WATER LEVEL MAKE/MODEL: NA		PID SERIAL#: NA WATER LEVEL SERIAL#: NA Colors from Munsell Soil Color Chart, Rev	

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	SPT DATA (0.5 Feet)	MONITORING (PPM/CPM)	REMARKS (Sample IDs/Depths/Core Box/Etc.)
		SM	Fine SAND (SM), little silt, Trace Gravel, Light Brownish Gray 10YR 6/2, Loose, Damp, Medium Plasticity, Iron Accumulation Strong Brown s/s.	Hand Auger Φ-1	NA	1530 LWSS-082-5292-50 for Total Cr + Hex Cr.
			Terminated Boring at 1' BGS BORING COMPLETE USING A 3" SS HAND AUGER			



GEOLOGIST SIGNATURE/DATE St. Vito 3/31/10	QA/QC SIGNATURE/DATE Emily Cunningham 3/31/10	BOREHOLE NUMBER LWSS-082
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**INCREMENTAL SAMPLING METHOD (ISM)
(FORMERLY MULTI-INCREMENTAL)
SURFACE SOIL SAMPLES**

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RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 44266

1. Sample Team: Mike Demallo

Steve Viscaly

2. Location ID:

LNW 55-φ7φM

3. Revised Coordinates Recorded:

NA

4. Sample ID:

LNW 55-φ7φM-5200-50

5. Sample Date and Time:

3/31/10

1554

6. Dupe ID:

NA

7. Split ID:

NA

8. MI Equipment Used:

Sc Bowl, Dolt + Push Probe

9. MS/MSD Collected:

NA

10. Activities in the Area:

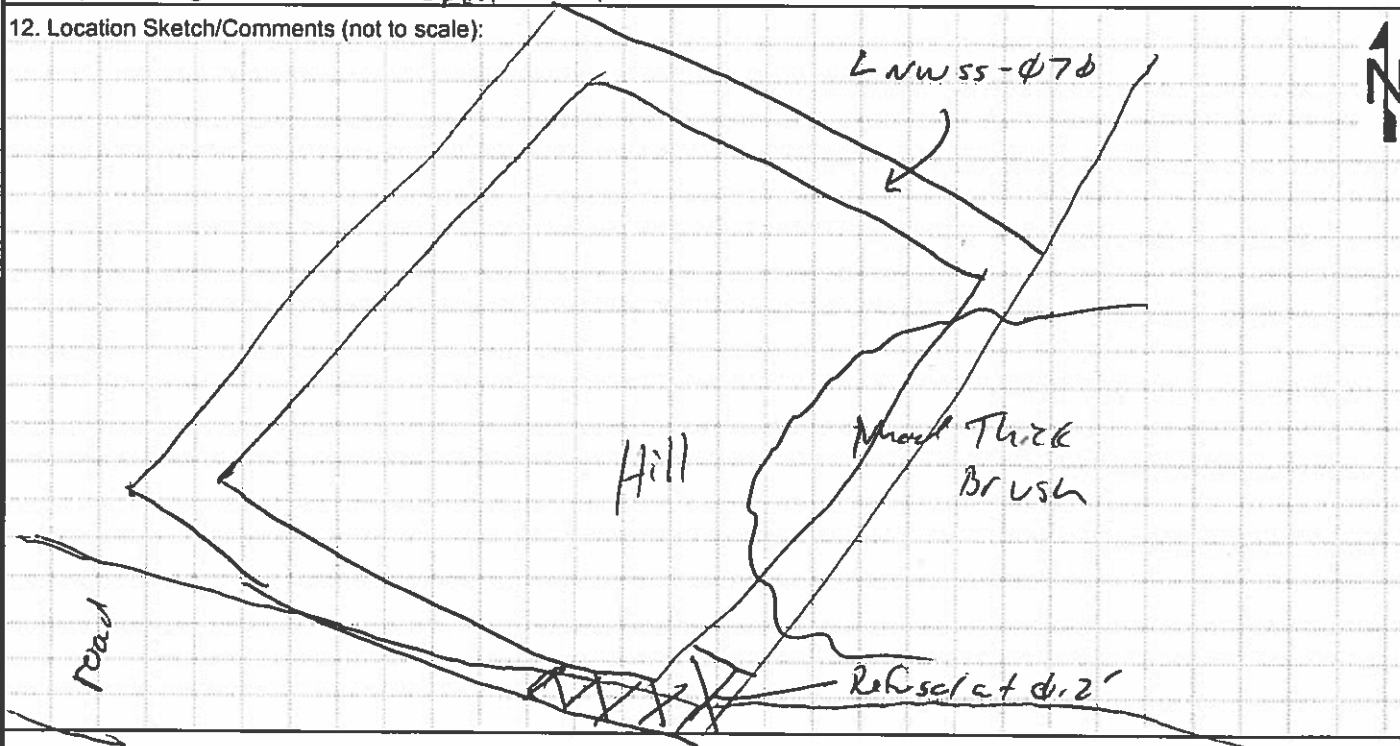
None

11. Soil Description and Field Notes: φ-φ.3': Fine SAND (SC), Some Silt, Trace Organics (locals)
Trace Clay. Very DK Gray 2-5% 3/1, soft to loose, Non plastic.

φ.3-1.0': Fine SAND, little silt, Trace very fine gravel, DK Grayish Brown 10YR 4/2
Loose, damp, ~~loose~~ non plastic, Iron accumulation yellowish brown 10YR 5/6

15% Brush 85% Open Field.

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

 EXPLOSIVES TAL METALS SVOCs PAHs OTHER _____
 FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

 3/31/10
 (Signature and Date)

QC Checked By:

 3/31/10
 (Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 442661. Sample Team: CHAD LAWRENCE
EMILY CUNNINGHAM

2. Location ID:

LNVSS-071M

3. Revised Coordinates Recorded:

EL
4/1/10

4. Sample ID:

LNVSS-071M-5281-50

5. Sample Date and Time:

04-01-2010; 1050

6. Dupe ID:

EL
4/1/10

7. Split ID:

EL
4/1/10

8. MI Equipment Used:

Hand Push Probe SS Bowl

9. MS/MSD Collected:

EL
4/1/10

10. Activities in the Area:

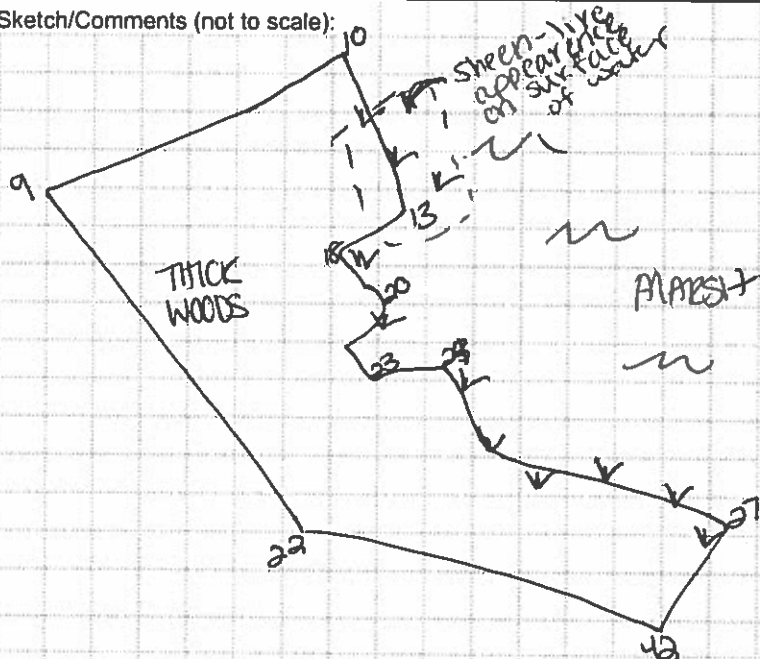
NONE

11. Soil Description and Field Notes: 98% WOODED UNTIL THE EDGE OF THE WATER. THICK BRUSH AND BEERS. THE NE CORNER THAT IS IN THE MARSH APPEARED TO HAVE A STRIVE TO THE SURFACE (POSSIBLY ~~USE~~ ^{4/1/10} ORGANIC DECAY). SAMPLES COLLECTED AT 30 POINTS (FROM 0-1' BGS USING A PUSH PROBE).

SILT (ML); trace Clay; trace Gravel (stiff Yellowish Brown (10YR 5/6) and Very Dark Gray (10YR 5/1)) soft to medium, damp to moist, slight plasticity, trace organics (roots + leaves); slight anaerobic odor. ^{4/1/10} Sheen.

Munsell 1994

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

 EXPLOSIVES TAL METALS SVOCs PAHs OTHER _____
 FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

Emily Cunningham
 (Signature and Date) 4/01/2010

QC Checked By:

Chad Lawrence 4/5/10
 (Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 442661. Sample Team: CHAD LAWRENCE
EMILY CUNNINGHAM

2. Location ID:

LNWSS-072M

3. Revised Coordinates Recorded:

62
4/1/10

4. Sample ID:

LNWSS-072M-5282-S0

5. Sample Date and Time:

04-01-2010; 1225

6. Dupe ID:

LNWSS-072M-6103-FD

7. Split ID:

LNWSS-072M-6102-0A

8. MI Equipment Used:

Hand Push Probe ss Bowl

9. MS/MSD Collected:

NO

10. Activities in the Area:

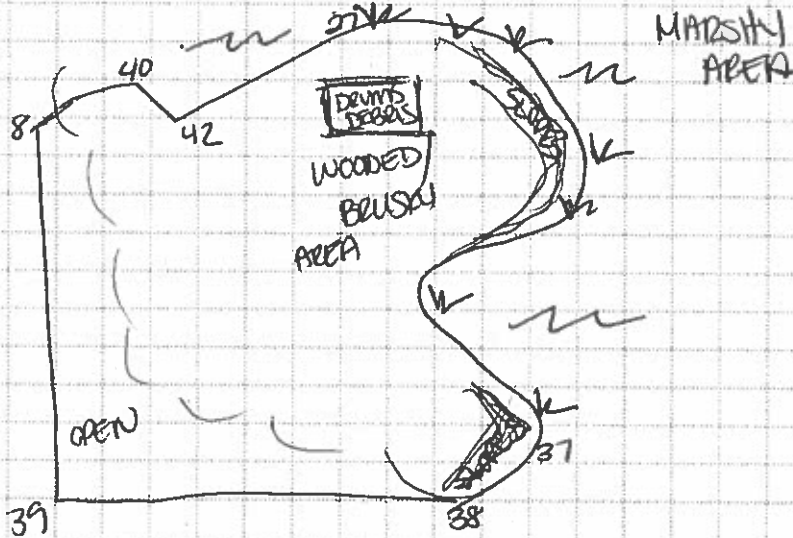
NONE

11. Soil Description and Field Notes: 95% WOODY / BUSHY AREA, 5% OPEN FIELD, PITS AND PARTS OF DAMS ARE SCATTERED ALONG THE HILLSIDE. Soil taken using a push probe to collect 30 sample from 0-1' bgs with in the MI area.

sandy SILT (ML). little clay. Gray (10YR 5/1) and Brown (10YR 4/4). silt to medium stiff; moist; non-plastic; trace organics (leaves, roots).

Munsell 1994

12. Location Sketch/Comments (not to scale):



13. MI Soil Analyses:

EXPLOSIVES TAL METALS SVOCs PAHs OTHER _____
 FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

Emily Cunningham 04/1/2010
(Signature and Date)

QC Checked By:

Chad Lawrence 4/5/10
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 44266

1. Sample Team: AUNA NELSON

RVAAP PBA 2008 RI

EMILY CUNNINGHAM

2. Location ID:

LNWSS - 073M

3. Revised Coordinates Recorded:

41.110

4. Sample ID:

LNWSS-073M-5283-S0

5. Sample Date and Time:

04-01-2010 1000

6. Dupe ID:

42
4/1/10

7. Split ID:

42
4/1/10

8. MI Equipment Used:

HAND PUSH PROBE SS Bowl

9. MS/MSD Collected:

42
4/1/10

10. Activities in the Area:

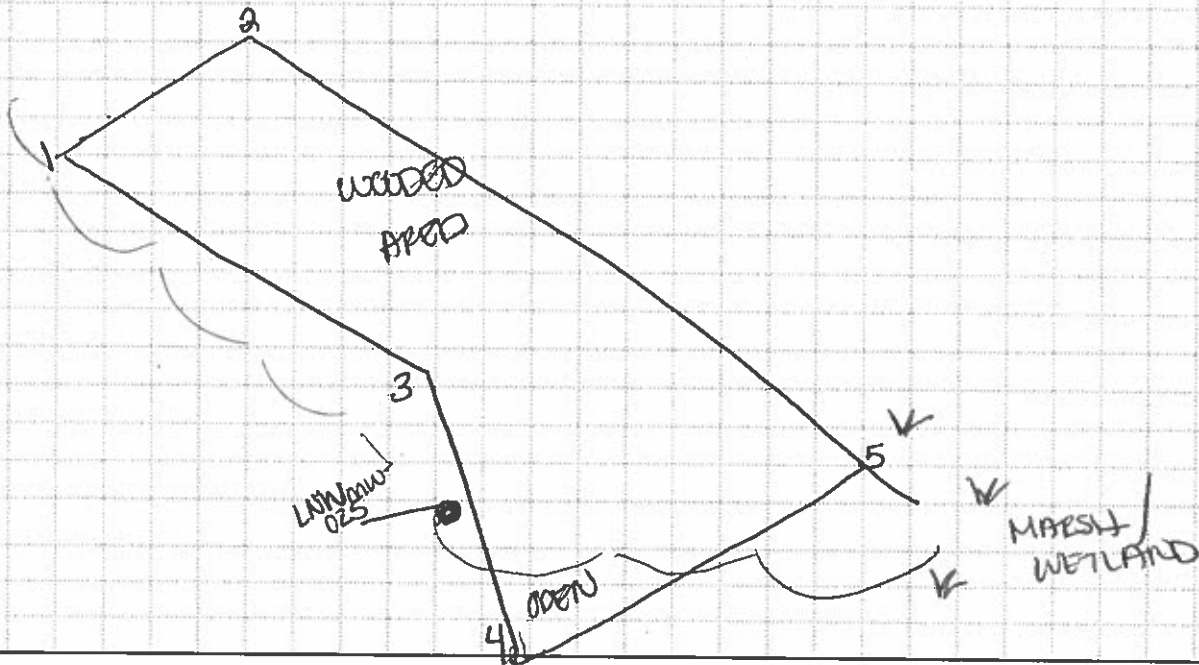
NONE

11. Soil Description and Field Notes: LNWSS-073M-5283-S0 collected using a hand push probe and thirty pin flags. The thirty flags are scattered randomly throughout the MI area. The push probe is then used to collect the sediment down to 1' bgs. 95% WOODED AREA.

4/5/10 SILT (ML): trace Clay; trace fine Gravel; Brown (7.5R 4/14); soft, damp; slight plasticity; trace organics (roots); possible cole fragments.
Low

Munsell 1994

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

- EXPLOSIVES
 TAL METALS
 SVOCs
 PAHs
 OTHER _____
 FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

Emily Cunningham
(Signature and Date) 4/1/10

QC Checked By:

STW 4/5/10
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 44266

1. Sample Team: GINA NELSON
EMILY CUMMINGHAM

2. Location ID:

LNWSS-074M

3. Revised Coordinates Recorded:

41.60
41.60

4. Sample ID:

LNWSS-074M-5284-SO

5. Sample Date and Time:

01-01-2010 ; 1040

6. Dupe ID:

41.60

7. Split ID:

41.60

8. MI Equipment Used:

Hand Push Probe ss Bowl

9. MS/MSD Collected:

41.60

10. Activities in the Area:

NONE

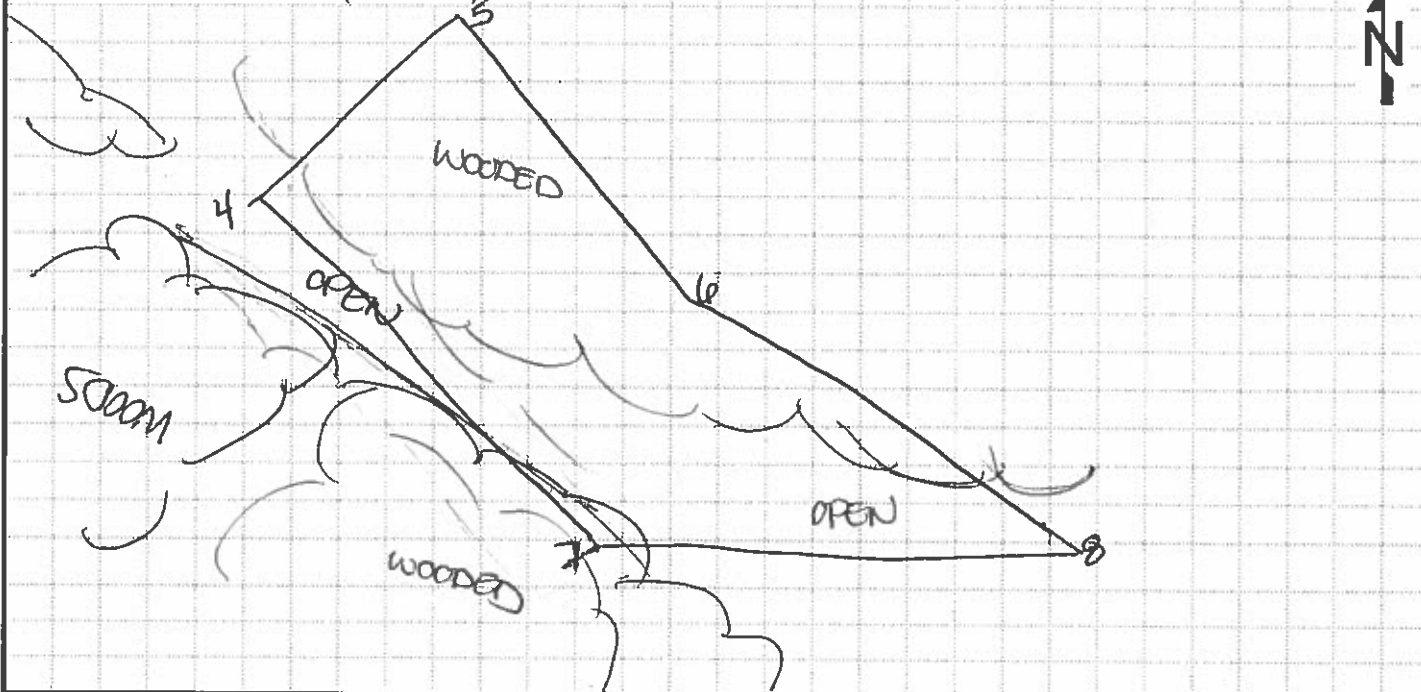
11. Soil Description and Field Notes:

Clayey SILT (ML); some Clay; trace Gravel; yellowish Brown (10YR 5/4) and Dark Grayish Brown (10YR 4/2) slight plastic, trace organics. soft

90% of MI area is wooded; 10% open grassy roads. The sample was collected at 30 locations from 0-1' bgs within the MI using the push probe.

Munsell 1994

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

- EXPLOSIVES
- TAL METALS
- SVOCs
- PAHs
- OTHER _____
- FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

Emily Cummingham 04/10/2010
(Signature and Date)

QC Checked By:

Stu Vrij 4/16/10
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 44266

1. Sample Team: Emily Canning Gann
Steve Visocky

2. Location ID:

LNW55-φ75M

3. Revised Coordinates Recorded:

None

4. Sample ID:

LNW55-φ75M-5285-SL

5. Sample Date and Time:

3/31/10 1635

6. Dupe ID:

NA

7. Split ID:

NA

8. MI Equipment Used:

SS Bowl, Spoon, Belt + Push Probe

9. MS/MSD Collected:

NA

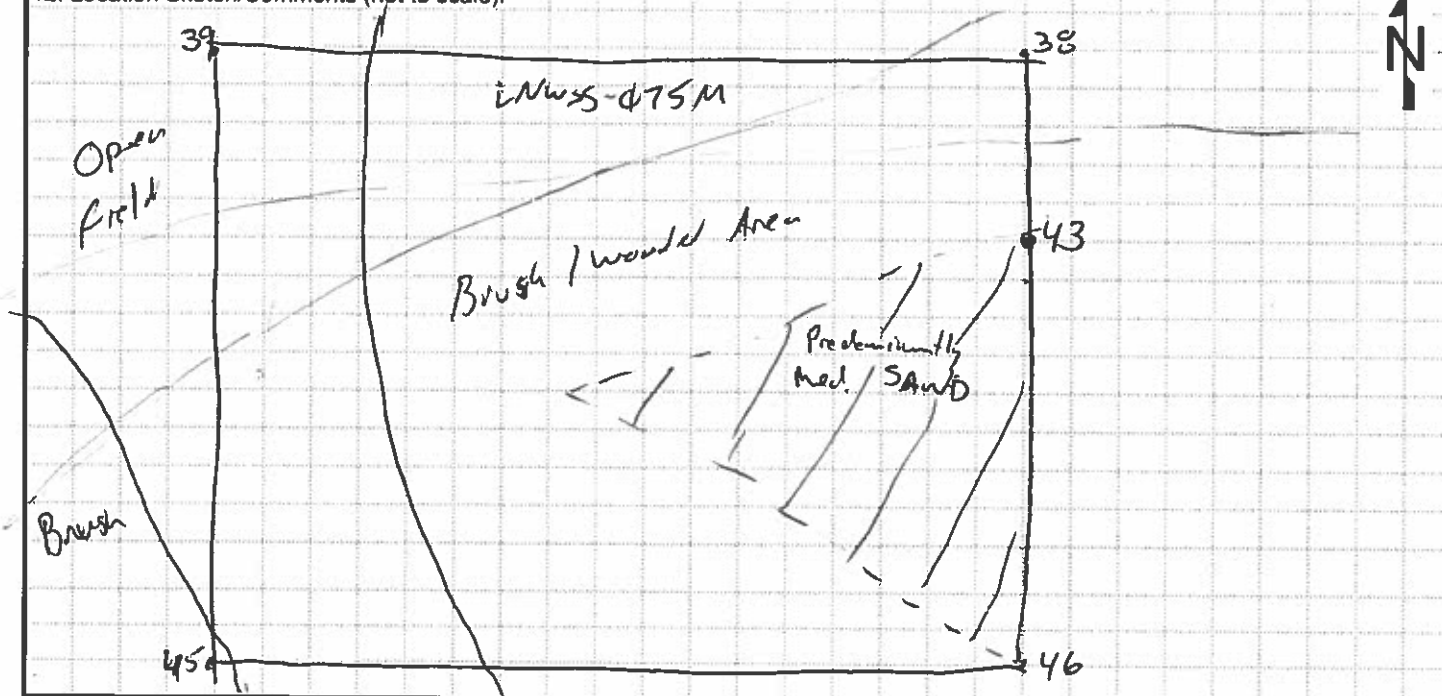
10. Activities in the Area:

None

11. Soil Description and Field Notes:

Main Area: Silty SAND (SC) Trace Clay, Angular, Grayish Brown
10YR 5/2, Loose, Damp, Non Plastic, Iron Accumulation, Strong Brown 7.5YR 5/8
Precious sand Area: Med. Angular SAND (SM), Trace Silt, Very loose, Moist,
Non plastic, Iron Accumulation strong Brown 7.5YR 5/9

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

- EXPLOSIVES TAL METALS SVOCs PAHs OTHER _____
 FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

[Signature]

(Signature and Date)

QC Checked By:

[Signature] 3/31/10

(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 44266

1. Sample Team: *Mike Donallo*
Steve Viscely

2. Location ID:

LNW55-φ76M

3. Revised Coordinates Recorded:

NA

4. Sample ID:

LNW55-φ76M-5286-50

5. Sample Date and Time:

3/31/10 1540

6. Dupe ID:

NA

7. Split ID:

NA

8. MI Equipment Used:

55 Gallon, Bolt, Push Probe

9. MS/MSD Collected:

NA

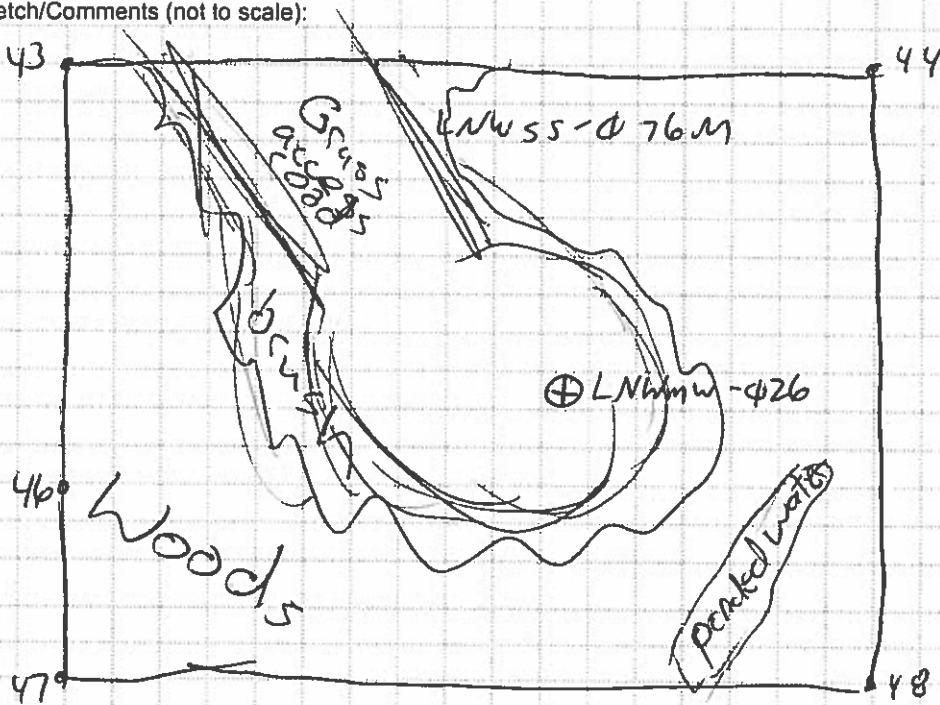
10. Activities in the Area:

None

11. Soil Description and Field Notes: *Med. Angular SAND, Trace silt, Trace gravel, Brown 10YR 4/3, Very Loose, moist, non plastic, Iron Accumulation 10YR 5/8 strong Brown*

70% wooded 30% open field

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

- EXPLOSIVES
 TAL METALS
 SVOCs
 PAHs
 OTHER _____
 FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

Steve Viscely 3/31/10
(Signature and Date)

QC Checked By:

Mike Donallo 3/31/10
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 442661. Sample Team: Alina Nelson
Emily Cunningham

2. Location ID:

LNWSS-071M

3. Revised Coordinates Recorded:

47.10

4. Sample ID:

LNWSS-071M-5287-S0

5. Sample Date and Time:

04-01-2010 1150

6. Dupe ID:

EL
4/1/10

7. Split ID:

EL
4/1/10

8. MI Equipment Used:

Hand Push Probe ss Bowl

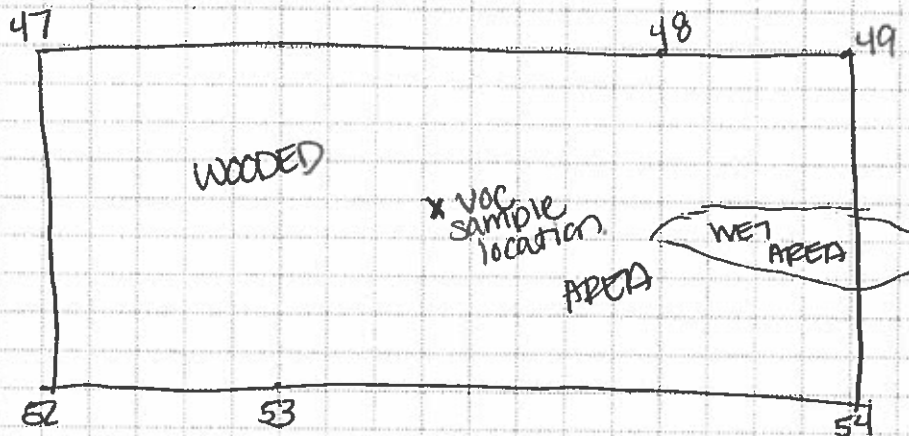
9. MS/MSD Collected:

NO

10. Activities in the Area:

POWE11. Soil Description and Field Notes: 100% wooded area. VOC sample collected at a single aliquot hole. 30 sample aliquots taken from 0-1' bgs using a hand push probe within the MI area.Sandy SILT (ML); little clay. Dark Yellowish Brown (1042410) and Gray (1042511); moist; medium plasticity; some organics (roots).Munsell 1994

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

- EXPLOSIVES TAL METALS SVOCs PAHs OTHER _____
 FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

Emily Cunningham 4/1/10
(Signature and Date)

QC Checked By:

St. V. / 4/5/10
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 442661. Sample Team: Aimee NassauCHAD LAWRENCE, EMILY CUMMINGS

2. Location ID:

LNWSS-078M

3. Revised Coordinates Recorded:

EL
4/1/10

4. Sample ID:

LNWSS-078M-5288-SD

5. Sample Date and Time:

04-01-2010 ; 1310

6. Dupe ID:

EL
4/1/10

7. Split ID:

EL
4/1/10

8. MI Equipment Used:

Hand Push Probe s3b-1

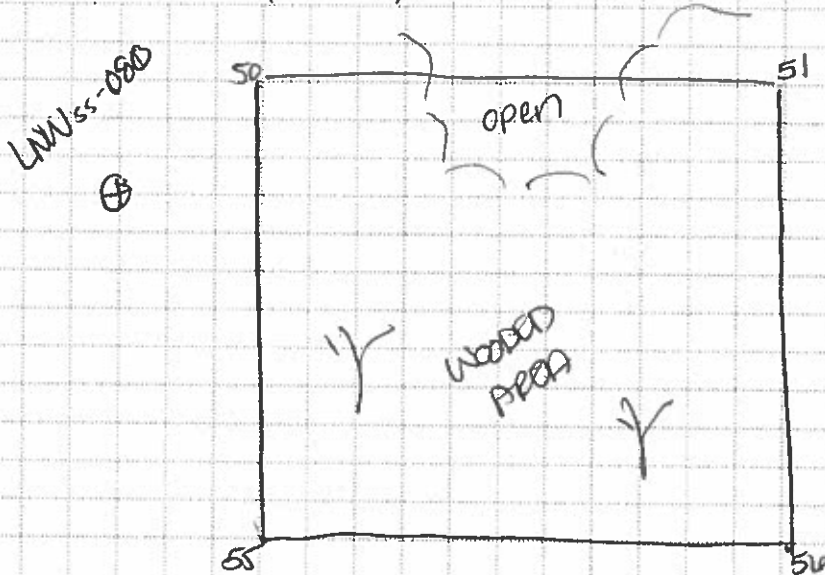
9. MS/MSD Collected:

EL
4/1/10

10. Activities in the Area:

NONE11. Soil Description and Field Notes: 30 pin flags were set randomly throughout MI area. A Hand Push Probe was used to collect a 0-1' bgs sample at each pin flag.Sandy SILT (ML); little clay; trace Gravel; Brown (10YR5/3) and Brownish Yellow (10YR 4/6); soft; moist; ^{low}plasticity; trace organics (roots).Munsell 1994

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

 EXPLOSIVES TAL METALS SVOCs PAHs OTHER _____
 FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

Emily Cummings 4/01/10
(Signature and Date)

QC Checked By:

Steve Vinsel 4/16/10
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 44266

1. Sample Team: FINA Nelson
EMILY CUMMINGS

2. Location ID:

LNWSS - 079M

3. Revised Coordinates Recorded:

EL
4/1/10

4. Sample ID:

LNWSS-079M-5289-S0

5. Sample Date and Time:

04-01-2010; 1230

6. Dupe ID:

2
4/1/10

7. Split ID:

EL
4/1/10

8. MI Equipment Used:

Hand Push Probe SS Bowl

9. MS/MSD Collected:

BS
4/1/10

10. Activities in the Area:

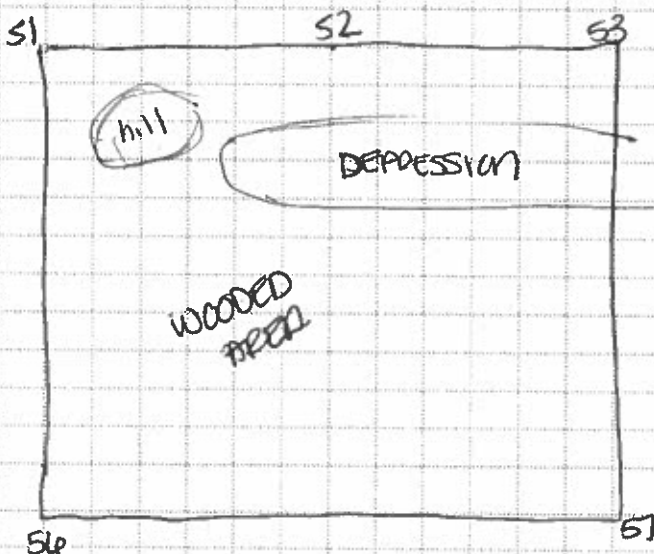
NONE

11. Soil Description and Field Notes: 100% wooded area with a few small hills. 30 pin flags were used to collect sample at random points within the MI area. The push probe was used to collect the 0-1' bgs sample at each pin flag.

SILT (ML). little fine sand; trace Gravel; Gray (10YR 6/1) and Brownish Yellow (10YR 6/6); damp; soft to medium stiff; non-plastic; trace organics (roots); slight decaying matter odor.

Munsell 1994

12. Location Sketch/Comments (not to scale):



13. MI Soil Analyses:

EXPLOSIVES TAL METALS SVOCs PAHs OTHER _____
 FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

Emily Cummings 4/1/10
(Signature and Date)

QC Checked By:

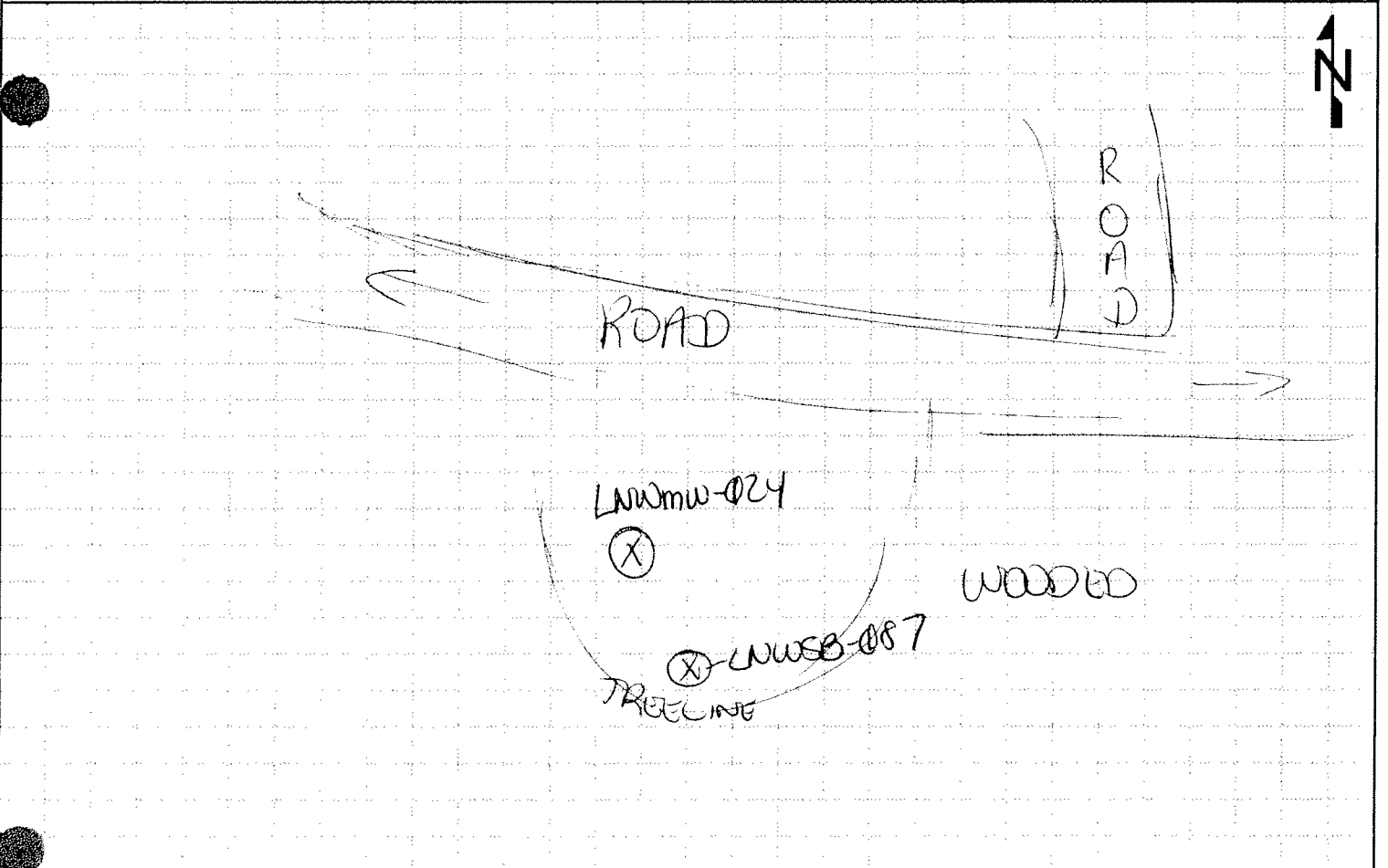
At 4/5/10
(Signature and Date)

SOIL BORING SAMPLES

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HTRW DRILLING LOG		DISTRICT USACE - Louisville	BOREHOLE NUMBER LNWSB-087
1. COMPANY NAME SAIC		2. DRILLING SUBCONTRACTOR Frontz Drilling	
3. PROJECT RVAAP PBA 08 BI		4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266	
5. NAME OF DRILLER Jeremy Leckrone		6. MAKE/MODEL OF DRILL Geoprobe WQZ0 DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT 4 1/4" ID Hollow Stem Augers 3" x 28" Shelby Tubes		8. BOREHOLE LOCATION N 564802.376 E 2358389.184 ELV 924.024 FT	
		9. SURFACE ELEVATION/DATUM NAD83	
		10. DRILL DATE/TIME STARTED: 1000 COMPLETED: 1350	
		15. DEPTH GROUNDWATER ENCOUNTERED 16.3 FT	
		16. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION NA	
12. OVERBURDEN THICKNESS 21.65 FT			
13. DEPTH DRILLED INTO BEDROCK NA		17. OTHER WATER LEVEL MEASUREMENTS (INCLUDE DATE/TIME) NA	
14. TOTAL DEPTH OF BOREHOLE 24 FT			
18. GEOTECHNICAL SAMPLES UNDISTURBED: 2 DISTURBED: —		19. TOTAL NUMBER OF CORE BOXES NA	
20. CHEMICAL SAMPLES CHEM: — RAD: NA OTHER: —		21. TOTAL CORE RECOVERY % NA	
22. DISPOSITION OF BOREHOLE DATE STARTED/INSTALLED: 04/02/10; 1000 DATE COMPLETED/ABANDONED: 04/02/10; 1350			
BACKFILL TYPE: <input type="checkbox"/> GROUT <input checked="" type="checkbox"/> BENTONITE <input type="checkbox"/> TEMPORARY WELL POINT <input type="checkbox"/> MONITORING WELL			
23. NOTES BKG: ≤ Background BGS: Below Ground Surface CPM: Counts per Minute PPM: Parts per Million ▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable			

LOCATION SKETCH/COMMENTS	SCALE: None
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GEOLOGIST SIGNATURE/DATE Amanda Jentm 04/02/10	QA/QC SIGNATURE/DATE RS 04/23/10	BOREHOLE NUMBER LNWSB-087
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RVAAP-19
Landfill North of WBG
LNWsb-087

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

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

Start Date : 04/02/10; 1000
 End Date : 04/02/10; 1350
 Northing Coord. : 564802.376
 Easting Coord. : 2358389.184
 Total Depth of Boring : 24.0 ft

Depth in feet	USCS Symbol	USCS Graphic	Description	Analyses	Recovery	Collection Interval	Comments	
0	ML		(0.0' - 1.0') SILT (ML); some Clay; some Sand; 10YR3/3 dark brown; very soft; damp; medium plasticity; some organics/roots throughout.				Soil Color Chart Munsell 2000 Rev. Ed.	
1	CL		(1.0' - 3.0') CLAY (CL); some Silt and very fine grained Sand; 10YR5/6 yellowish brown and 2.5Y6/3 light yellowish brown; soft; damp; high plasticity.		1.9'/4.0'			
2	CL		(3.0' - 4.95') CLAY (CL); some Silt; little Gravel; 10YR5/4 yellowish brown; stiff; dry; medium plasticity; trace iron accumulations.	Shelby Tube LNWsb-087-5270-SO collected from 4.0' - 5.5' on 04/02/10 at 1110 for Porosity, Bulk Density, Moisture Content, Total Organic Carbon, Permeability, and Grain Size Fraction Analysis.				
3	CL		(4.65' - 4.95') GRAVEL, 1/2" - 1.5"; clay matrix; dry.					
4	CL		(4.95' - 9.3') CLAY (CL); little Silt; trace Gravel, 1/2" - 1"; 10YR5/4 yellowish brown, N6/ gray, and little 2.5YR8/1 white; stiff; dry; low plasticity.			4.0'/4.0'		
5			(8.45' - 8.75') Silt; medium stiff; damp.					
6			(9.05' - 9.3') Silt; medium stiff; damp.					
7	CL		(9.3' - 12.45') CLAY (CL); little Silt; trace Gravel, <1/2"; 10YR5/2 grayish brown and 10YR5/6 yellowish brown; stiff; dry; medium plasticity; brittle when dry; crumbles under pressure.	Shelby Tube LNWsb-087-5271-SO collected from 12.0' - 13.5' on 04/02/10 at 1345 for Porosity, Bulk Density, Moisture Content, Total Organic Carbon, Permeability, and Grain Size Fraction Analysis.				
8			(12.45' - 15.25') CLAY (CL) some Silt; trace Gravel, <1/4"; 10YR5/1 gray; dry, damp in pockets; medium plasticity; Silt content increases with depth.			4.0'/4.0'		
9	CL		(15.25' - 16.3') SILT (ML); some Clay; 10YR5/1 gray; medium stiff; dry to damp; medium plasticity;					
10			(15.8' - 16.3') Introduction of fine to medium grained Sand; Sand content increases with depth.					
11			(16.3' - 21.65') Fine to medium grained SAND (SW); little Gravel, <1/2", subangular; trace Silt; 10YR6/3 pale brown; loose; wet; nonplastic.		0.8'/4.0'			
12	SW		(21.65' - 24.00') SHALE (SH); weathered; N4/ dark gray; dry; brittle; more competent with depth.		2.35'/4.0'			
13	SH							
14			Boring terminated at 24.0 ft bgs.					

Coordinate System: NAD 83

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

LNWsb-087

SURFACE WATER AND SEDIMENT SAMPLES

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RVAAP - Surface Water & Wet Sediment Field Form

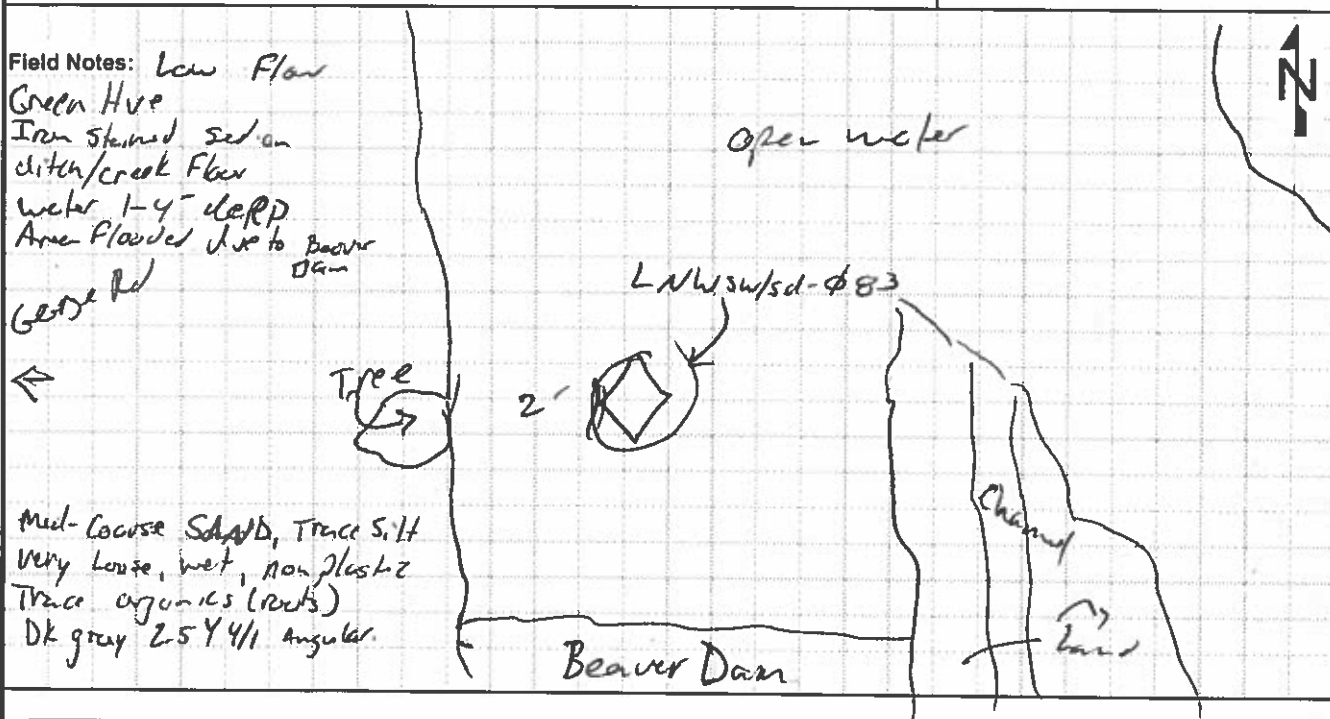
SHEET 1 OF 1

USACE - Louisville
RVAAP PBA 2008 RIRVAAP 8451 State Rt. 5
Ravenna, OH 442661. Sample Team: Rich Sprinzel
Steve Visocky

2. Location ID: LNWSW-φ83	3. Revised Coordinates Recorded: NA
4. Surface Water Sample ID: LNWSW-φ83-5276-SW	5. Date and Time: 3/30/10 1410
6. Dupe ID (if needed): NA	7. Split ID (if needed): NA
8. Surface Water Sample Type and Equipment Used: 5 Bowl Push Probe + Bolt + SV Direct Drill	9. MS/MSD: NA
10. Wet Sediment Sample ID: LNWSd-φ83-5272-SD	11. Date and Time: 3/30/10 1410
12. Dupe ID (if needed): NA	13. Split ID (if needed): NA
14. Wet Sediment Sample Type and Equipment Used: 5 Bowl + Bolt Push Probe	15. MS/MSD: NA
16. Weather Conditions: Sunny 55°F	17. Activities in the Area: None

LOCATION SKETCH/COMMENTS

SCALE: None



FIELD MEASUREMENTS	READING	UNITS	SERIAL NO.	LAST CALIB.
TEMPERATURE:	9.13	°C	15558	3/30/10
pH:	8.69	S.U	↓	↓
CONDUCTIVITY:	φ.124	mS/cm	↓	↓
DO:	8.74	mg/L	↓	↓
TURBIDITY:	9.61	NTU	15557	↓
OTHER _____:				

SURFACE WATER ANALYSES:

 EXPLOSIVES TAL METALS SVOCs OTHER _____
 FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

WET SEDIMENT ANALYSES:

 EXPLOSIVES TAL METALS SVOCs OTHER _____
 FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

 (Signature and Date) 3/30/10

QC Checked by:

 (Signature and Date) 3/31/10



RVAAP - Surface Water & Wet Sediment Field Form

SHEET 1 OF 1

USACE - Louisville
RVAAP PBA 2008 RI

RVAAP 8451 State Rt. 5
Ravenna, OH 44266

1. Sample Team: Rich Sprinzel
Steve Viocky

2. Location ID: LNWsw/sw - 084

3. Revised Coordinates Recorded: NA

4. Surface Water Sample ID: LNWsw - 084 - 5276 - SW

5. Date and Time: 3/30/10 1530

6. Dupe ID (if needed): NA

7. Split ID (if needed): NA

8. Surface Water Sample Type and Equipment Used: Direct Fill

9. MS/MSD: NA

10. Wet Sediment Sample ID: LNWsd - 084 - 5274 - SD

11. Date and Time: 3/30/10 1530

12. Dupe ID (if needed): NA

13. Split ID (if needed): NA

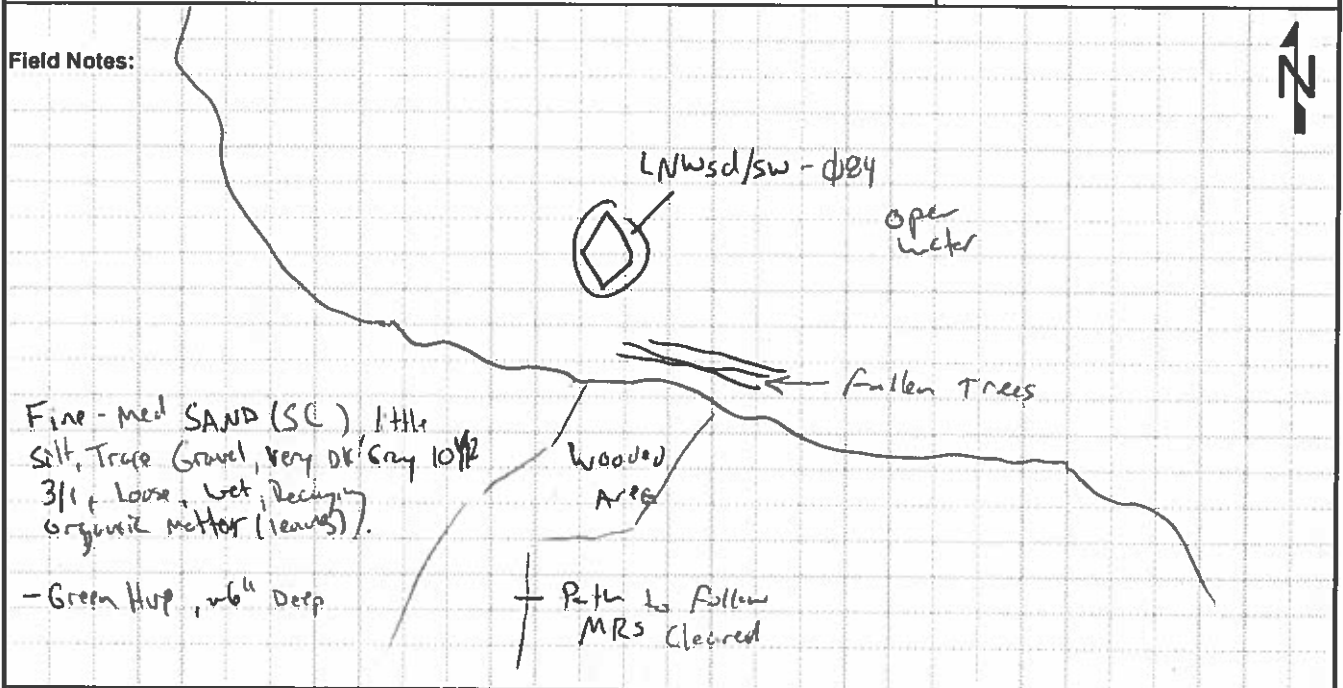
14. Wet Sediment Sample Type and Equipment Used: SS Bowl + Push Probe

15. MS/MSD: NA

16. Weather Conditions: Sunny 55°F

17. Activities in the Area: None

LOCATION SKETCH/COMMENTS SCALE: None



FIELD MEASUREMENTS	READING	UNITS	SERIAL NO.	LAST CALIB.
TEMPERATURE:	9.80	°C	15558	3/30/10
pH:	7.30	S.U	↓	↓
CONDUCTIVITY:	126	mS/cm	↓	↓
DO:	8.46	mg/L	↓	↓
TURBIDITY:	11.4	NTU	15557	↓
OTHER _____:	← NA →			

SURFACE WATER ANALYSES:

EXPLOSIVES TAL METALS SVOCs OTHER _____

FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

WET SEDIMENT ANALYSES:

EXPLOSIVES TAL METALS SVOCs OTHER _____

FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By: Steve Viocky 3/30/10
(Signature and Date)

QC Checked by: RS 3/31/10
(Signature and Date)



RVAAP - Surface Water & Wet Sediment Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 442661. Sample Team: Bill Sprinzl
Steve Vizocky

2. Location ID:

LNW_{sw}-085

3. Revised Coordinates Recorded:

NA

4. Surface Water Sample ID:

LNW_{sw}-085-5278-SW

5. Date and Time:

3/30/10 1630

6. Dupe ID (if needed):

NA

7. Split ID (if needed):

NA

8. Surface Water Sample Type and Equipment Used:

Direct Fill9. MS/MSD: NA

10. Wet Sediment Sample ID:

LNW_{sd}-085-5274-SD

11. Date and Time:

3/30/10 1630

12. Dupe ID (if needed):

NA

13. Split ID (if needed):

NA

14. Wet Sediment Sample Type and Equipment Used:

55 Bowl Trowel Bolt Push Probe15. MS/MSD: NA

16. Weather Conditions:

sunny 55 P

17. Activities in the Area:

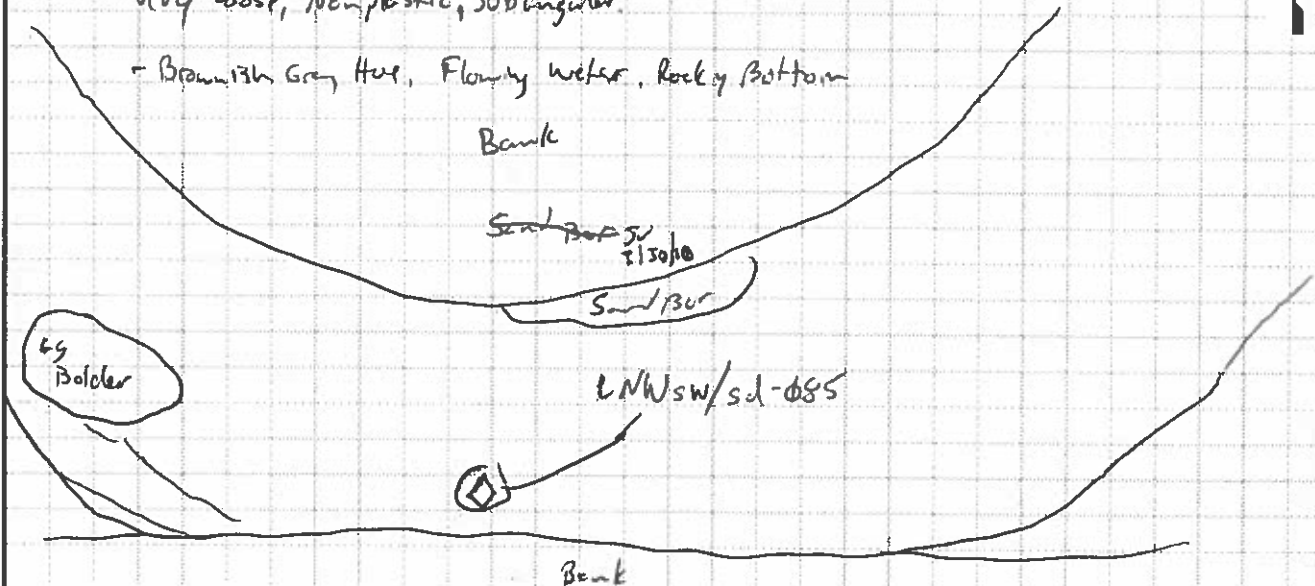
None

LOCATION SKETCH/COMMENTS

SCALE: None

Field Notes: Fine GRAVEL, Little Coarse Sand, Trace Silt, Olive Brown 2.5 Y 4/3
Very loose, non-plastic, sub-angular.

- Brownish Gray Hue, Flowing water, Rocky Bottom



FIELD MEASUREMENTS	READING	UNITS	SERIAL NO.	LAST CALIB.
TEMPERATURE:	<u>12.01</u>	<u>°C</u>	<u>15558</u>	<u>3/30/10</u>
pH:	<u>8.03</u>	<u>S.U</u>	↓	↓
CONDUCTIVITY:	<u>0.115</u>	<u>mS/cm</u>	↓	↓
DO:	<u>14.51</u>	<u>mg/L</u>	↓	↓
TURBIDITY:	<u>12.7</u>	<u>NTU</u>	<u>15557</u>	↓
OTHER _____:	<u>←</u>	<u>NA</u>	→	→

SURFACE WATER ANALYSES:

- EXPLOSIVES TAL METALS SVOCs OTHER _____
 FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

WET SEDIMENT ANALYSES:

- EXPLOSIVES TAL METALS SVOCs OTHER _____
 FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

[Signature] 3/30/10
(Signature and Date)

QC Checked by:

[Signature] 3/31/10
(Signature and Date)



RVAAP - Surface Water & Wet Sediment Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 442661. Sample Team: Gina Nelson
Mike Denallo

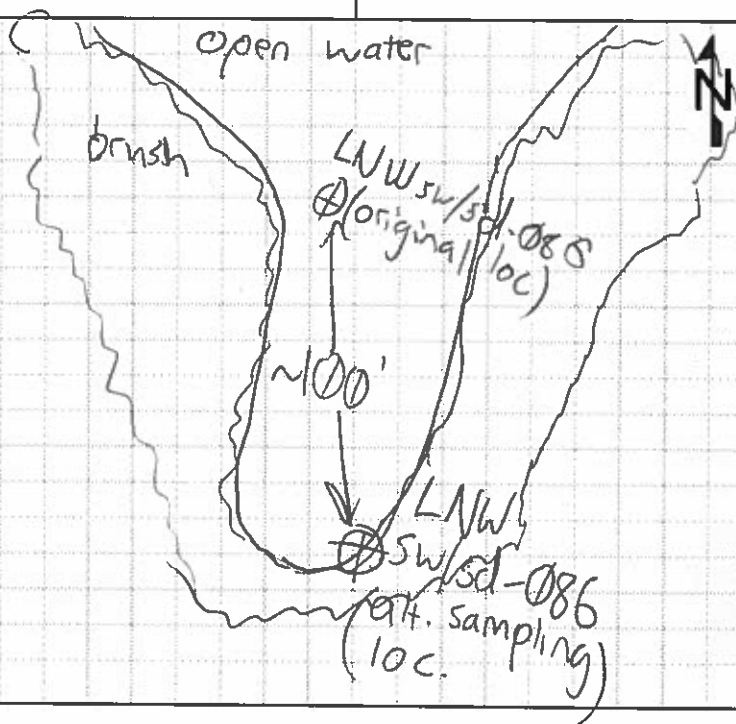
2. Location ID: LNWSD/SW-086		3. Revised Coordinates Recorded: N: 564242.38A; E: 2358831.88A	
4. Surface Water Sample ID: LNWSW-086-5279-SW		5. Date and Time: 03/31/10 0945	
6. Dupe ID (if needed): -		7. Split ID (if needed): NA	
8. Surface Water Sample Type and Equipment Used: Direct fill			9. MS/MSD: NA
10. Wet Sediment Sample ID: LNWSD-086-5275-SD		11. Date and Time: 03/31/10 0945	
12. Dupe ID (if needed): NA		13. Split ID (if needed): NA	
14. Wet Sediment Sample Type and Equipment Used: ss push probe & bowl			15. MS/MSD: NA
16. Weather Conditions: 55°F, sunny		17. Activities in the Area: none	

LOCATION SKETCH/COMMENTS

SCALE: None

soil description:
Field Notes: SILT (OL), ^{sw/12/10} sand some
Sand, ^{sw/12/10} little gravel trace Gravel
(fine), 2.5Y 3/1 very dark
grey, very soft, saturated,
low plasticity, organic stagnant
odor, some roots/organic material

Woods



FIELD MEASUREMENTS	READING	UNITS	SERIAL NO.	LAST CALIB.
TEMPERATURE:	8.04	°C	9828	3/31/10
pH:	6.94	S.U.	↓	↓
CONDUCTIVITY:	0.128	mS/cm	↓	↓
DO:	5.18	mg/L	↓	↓
TURBIDITY:	23.6	NTU	98703	↓
OTHER _____:	NA			→

SURFACE WATER ANALYSES:

- EXPLOSIVES TAL METALS SVOCs OTHER _____
 FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

WET SEDIMENT ANALYSES:

- EXPLOSIVES TAL METALS SVOCs OTHER _____
 FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

(Signature and Date) 03/31/10

QC Checked by:

(Signature and Date) 3/31/10