

Appendix J

Geotechnical

C-Block Quarry

Load Line 12

Building 1200

Landfill North of Winklepeck Burning Grounds

Pistol Range

NACA Test Area

Load Line 5

Load Line 7

Load Line 8

Load Line 10

Buildings F-15/F-16

Atlas Scrap Yard

Sample Number	Depth (feet)	Moisture Content	Liquid Limit %	Plastic Limit %		Organic Content (%)		C Sand %	M Sand %	F Sand %	Silt %	Silt&Clay Comb.	Clay %	Soil Description	Class. Symbol
CBLmw-001	1.7	18.0	31	21	10		12.1	12.2	9.3	17.5		49.0		Mottled brown CLAYEY SAND, little gravel	SC

PRIME ENGINEERING & ARCHITECTURE INC.

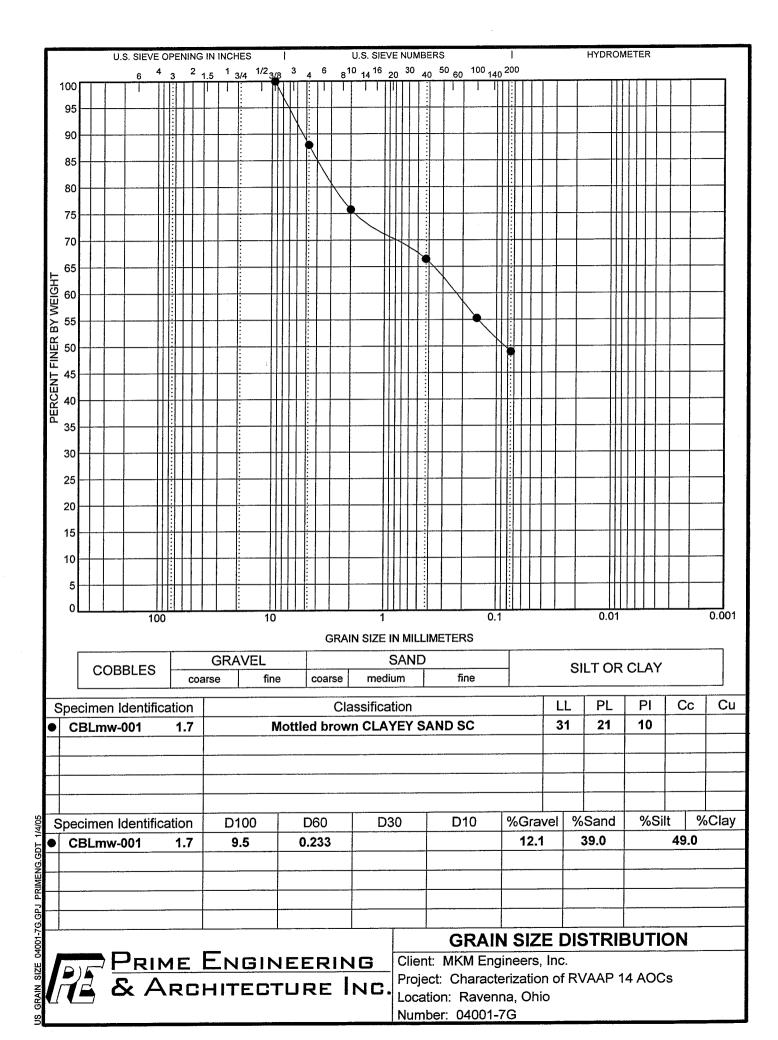
Summary of Laboratory Results Client: MKM Engineers, Inc.

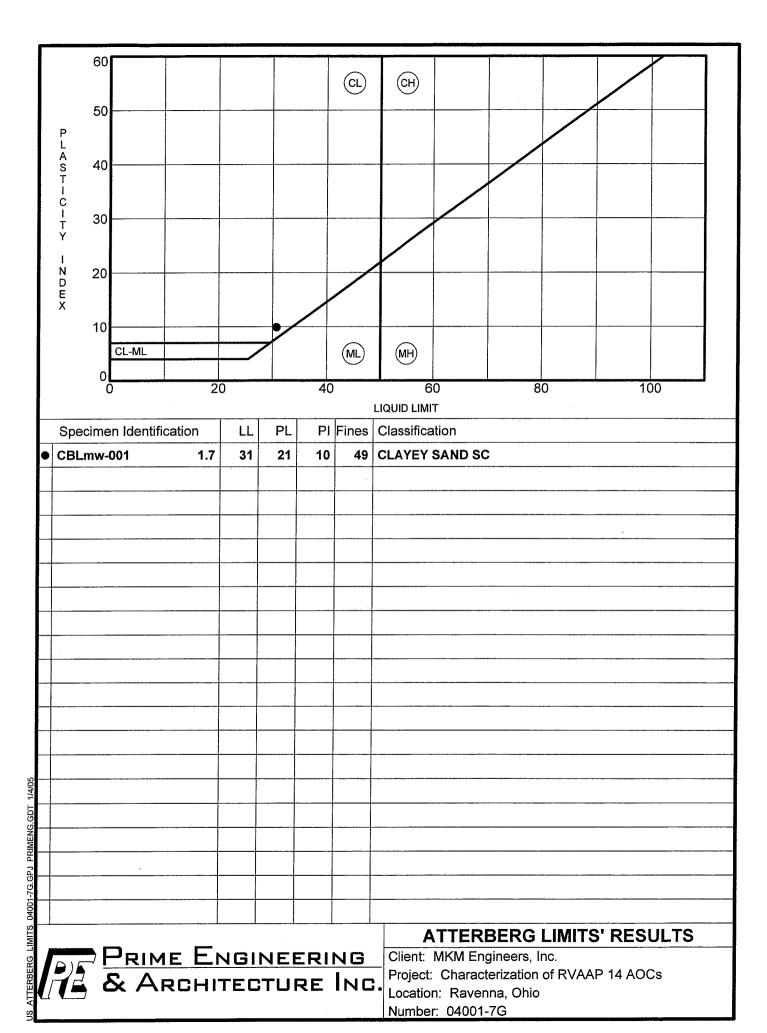
Project: Characterization of RVAAP 14 AOCs

Location: Ravenna, Ohio

Number: 04001-7G

Location ID: CBL	1W - 00 3-04	0-2	ft) 1	Field Sai	mpling R	Report			•	
				Samplir	ıg Informa	ition				
Source	Grou	ndwater / Produ	ıct		Surface Wat	er	Soil	Sediments	s / Sludge	
Method	Bailer			Sample Bot	ttle		Scoop		Trowel	
	Pump			Bacon Borr	ıb		Bowl		Hand Auger	
			-				Push Probe		Shelby Tube	-
Interest of Sample (Sample Basiler Product Sarpice Water Sociology Sectionation / Studge										
Miscellaneous	_	ing Form								
_	Recenses Army Ammonities		d veyed							
Field Parameters (at time of sample)			Analy	tical Para	meters		o	ther Parai	neters	
PID / FID Readings:		VOC		TPF	I GRO		Corrosivity			
Background:	ppm	SVOC		TPF	H DRO		Reactivity Sulfide/Cy	vanide		
	Revenue Armonistic Characterization of H RVAAP Construction Characterization of H RVAAP									
Sample:	ppm	Propellants		Nitr	ate					
Water Level	FT	TAL Metals		Geo	technical	/		QA Samp	oles	
Temperature	°C	Pesticides/PCF	3s				MS/MSD	Yes / No		NA
Date 12 - 13 - 04		iΑ								
pH	units	TOC					Equipment Rinse ID		N	A
Turbidity	N.T.U.	Grain Size					Trip Blank ID		N	Α
	Sample	e Description					ID:	Sample		
Munsell Color Odor Stain Water sample description should	ing Texture	Sorting Plastic	rity Moist	we		Agency/Com Address:	i ided: MS/MSD - Duplicate		Field Blanks	
Munsell Color Odor Stains Water sample description should Color Odor Sheen Turb	ing Texture include:		ari, garantula yan	ure		Agency/Com Address: QA/QC Prov Parameters:	ided: MS/MSD - Duplicate Same as Above - As			





Prime Engineering & Architecture

Project No.: 04001G

Project: RVAAP

Client: MKM Engineers

Technician(s): Stephanie and Brandi

Date: 1/4/2005

Sample No: pH Reading: Specific Gravity:

CBLmw-001 6.9 2.760

Sample Number	Depth (feet)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plast. Index	Organic Content (%)	Agg.	C Sand %	M Sand %	F Sand %	Silt	Silt&Clay Comb.	Clay %	Soil Description	Class. Symbol
CBLmw-004	3.7	14.5	17	17	NP		2.9	3.1	10.3	34.1	70	49.6	,,,	Brown SILTY SAND, trace gravel	SM

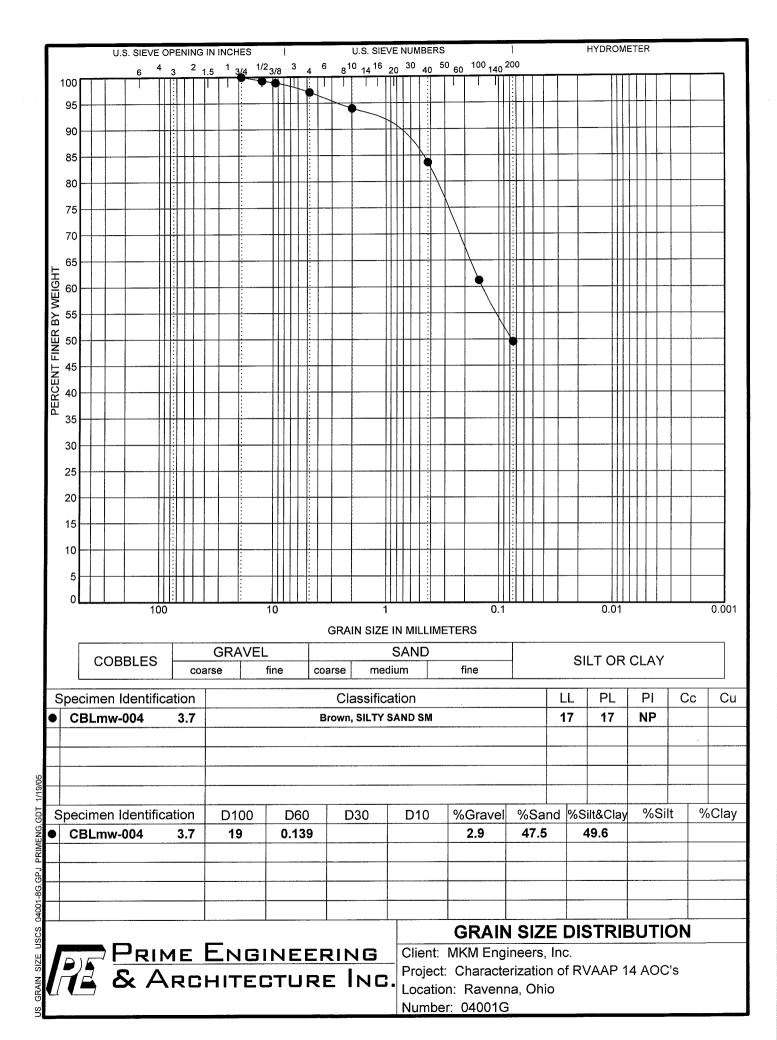


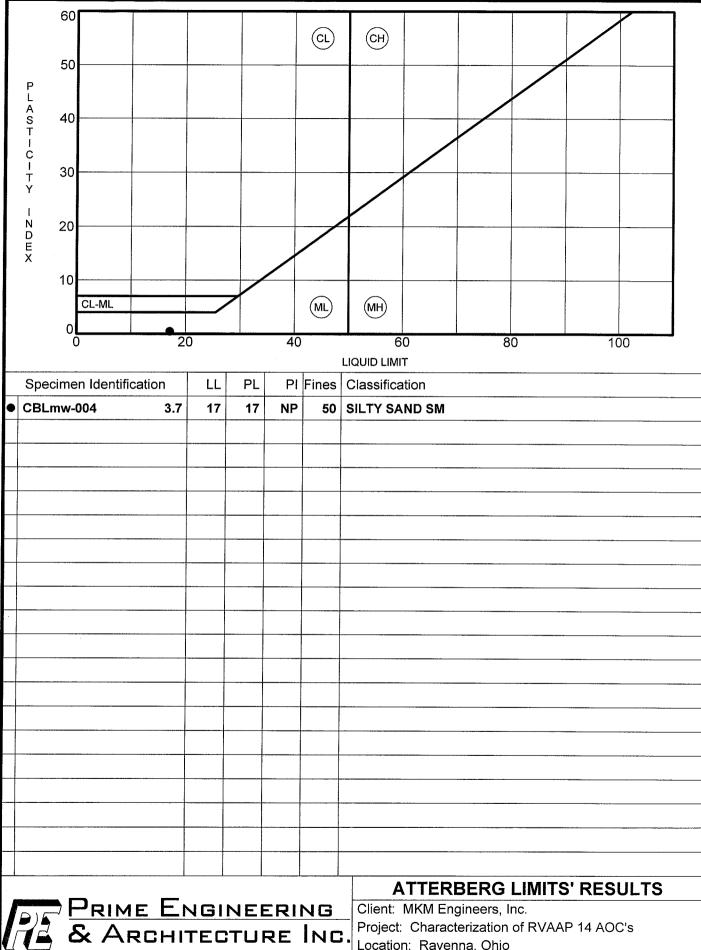
Project: Characterization of RVAAP 14 AOC's

Location: Ravenna, Ohio

Number: 04001G

Location ID: CBLM Date: 1-04-	w - 00	<u> </u>	Field	Sampling R	eport			Army Ammunition Pation of 14 RVAAP A	
			San	npling Informa	tion				
Source	Grou	ndwater / Product		Surface Wate		Soil	s Sediments	s / Sludge	
Method	Bailer		Samp	le Bottle		Scoop		Trowel	
	Pump		Bacoi	n Bomb		Bowl		Hand Auger	
						Push Probe		Shelby Tube	~
Type/Construction							1		
Miscellaneous	Well Purg	ing Form							
Sample Collection: Of Oo hrs		Sample Type:		- MI - Grab f increments taken:		Location	Plotted on	Map Staked in Field - Measured - Surve	2
Sample Depth: 2-4 FT (below surfac	e) Decon:		- Each Day - Each	Location		Estimated	- Measured - Surve	yeu
Field Parameters (at time of sample)		Aı	nalytical	Parameters		О	ther Parai	neters	
PID / FID Readings:		VOC		TPH GRO		Corrosivity			
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	anide		
		Explosives		Chromium +6		Ignitability			
Sample:	ppm	Propellants		Nitrate					
Water Level	FT	TAL Metals		Geotechnical	✓		QA Samı	oles	
Temperature	°C	Pesticides/PCBs		***************************************		MS/MSD	Yes / No	N.	Α
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID		NA	
рН	units	TOC				Equipment Rinse ID		NA	
Turbidity	N.T.U.	Grain Size	/		030000000000000000000000000000000000000	Trip Blank ID	men - Z a	NA	
Soil sample description should in Munsell Color Odor Stains	clude:	Sorting Plasticity A	<i>Aoisture</i>			e ID: 1	s Listed	Field Blanks	
Water sample description should								olyssi i i i i i i i i i i i i i i i i i i	
Color Odor Sheen Turbi		(Please Pri	int)	ere se está a prosperio haciendo Antres está esta e	Revie	ewed by: SAC:	Bales	(Please	: Print)
Signature:	-1-0	(1 lease PI				mature:	bles	Date:	05





Location: Ravenna, Ohio Number: 04001G

Prime Engineering & Architecture

Project No.: 04001G Project: RVAAP

Client: MKM Engineers

Technician(s): Brandi

Date: 1/17/2005

Specific Gravity: pH Reading: Sample No:

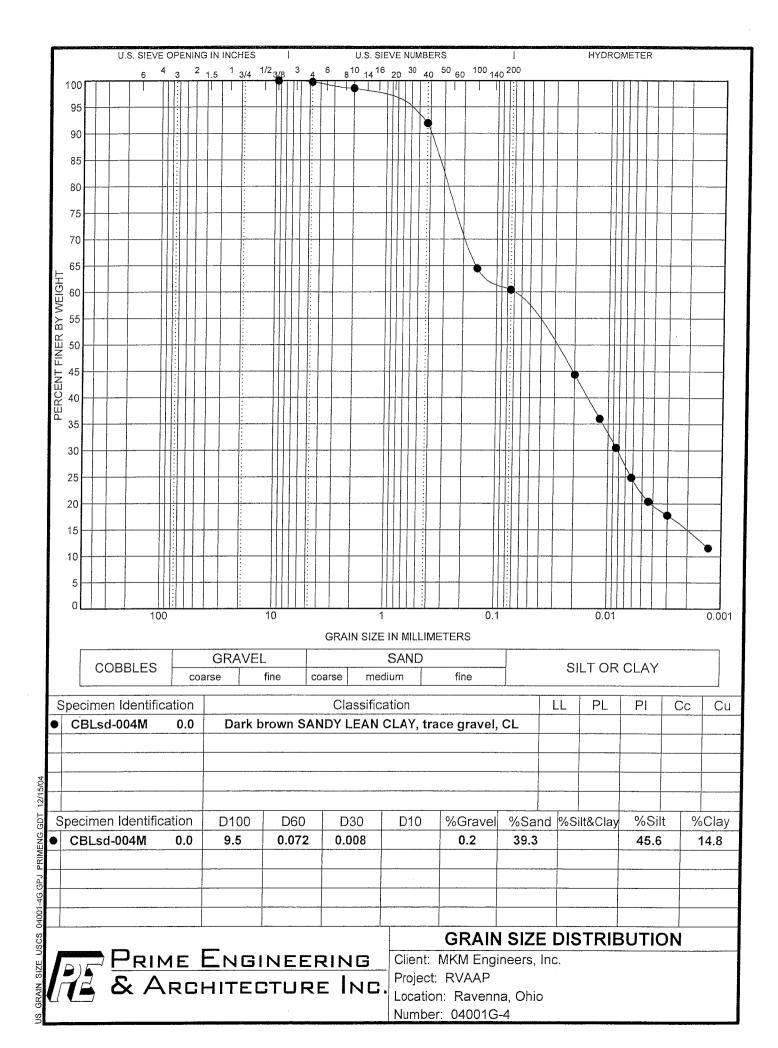
8.4 2.767 CBLmw-004

Sample Number	Depth (feet)	Moisture Content %	Plastic Limit %	Plast. Index	Organic Content (%)		C Sand %	M Sand %	F Sand %	Silt	Silt&Clay Comb.	Clay %	Soil Description	Class. Symbol
CBLsd-004M	0.0	48.3			4.1	0.2	1.2	6.6	31.5	45.6	60.4	14.8	Dark brown SANDY LEAN CLAY, trace gravel	CI



Project: RVAAP

Location: Ravenna, Ohio



12/6/04
USCS SUMMARY 04001-3G.GPJ PRIMENG.GDT 12/6/04
04001-3G.GPJ
SUMMARY
USCS

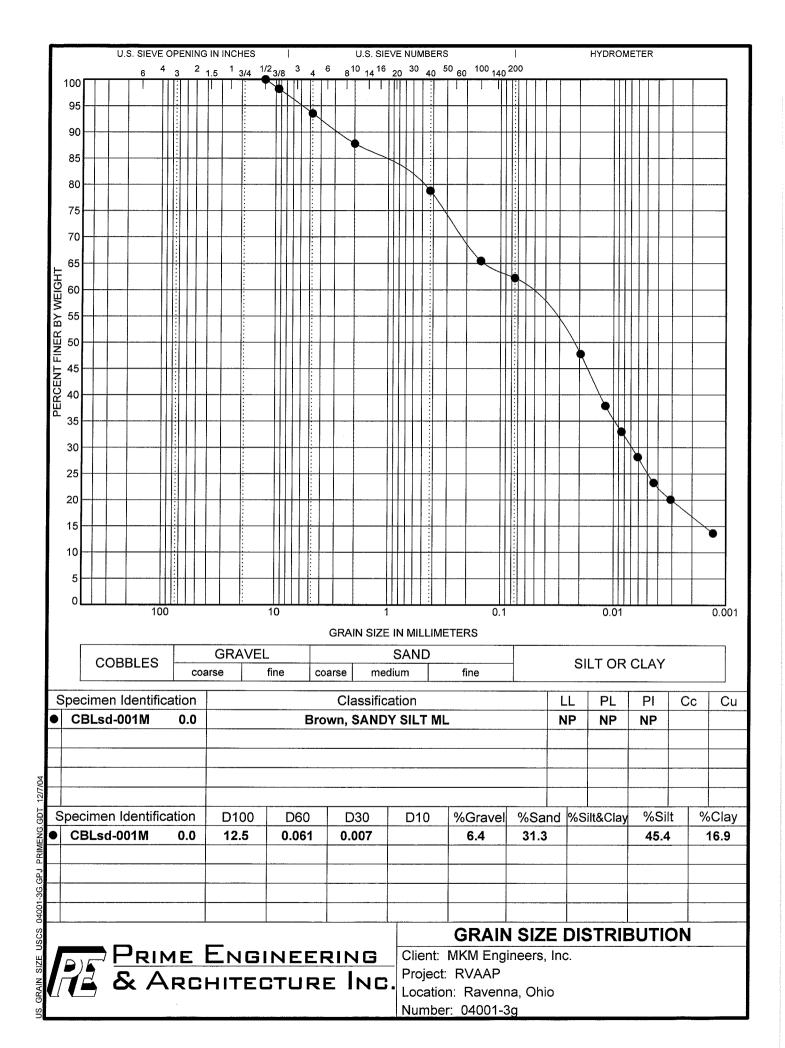
Sample Number	Depth (feet)	Moisture Content	Liquid Limit %	Plastic Limit		Organic Content (%)	Agg.	C Sand	M Sand	F Sand		Silt&Clay Comb.	Clay	Soil Description	Class.
ASYsd-024M	0.0	228.4	NP	NP	NP	9.3	% 0.0	0.5	%	%	%				Symbol
B12sd-023M	0.0	116.7				6.8	1.7		4.8		·		25.4	City Oil 1, fittle Sallu	ML
B12sd-024M	0.0	189.1	NP	NP	NP	11.7		2.1	3.3				31.9	Complete the control of the control	CL
CBLsd-001M	0.0	45.2	NP	NP	NP		0.7	9.5	4.4				23.7	i ace mave	ML
CBLsd-002M	0.0	34.9	NP	NP		3.3	6.4	5.8					16.9	Divini of the Folker trace travel	ML
CBLsd-003M	0.0	62.2	NP	NP	NP	3.5	1.7	2.1	5.2				17.7	Brown SILT WITH SAND, trace gravel	ML
L12MW-242	9.5	19.1	NP		NP	4	4.2	2.1	3.9	10.3	56.4	79.5	23.2	Brown SILT WITH SAND, trace gravel	ML
L12MW-242	13.5	27.5		NP	NP		0.0	0.0	0.2	0.5		99.3		Gray SILT, trace sand	ML
L12MW-244	7.5	1	NP	NP	NP		0.0	0.0	0.0	0.0		100.0		Gray SILT	ML
LL7sd-012M		17.1	33	22	11		0.3	1.9	4.9	12.8		80.1		Brown LEAN CLAY WITH SAND, trace gravel	CL
	0.0	36.8	NP	NP	NP	5.9	12.6	16.2	20.6	18.4	25.4	32.2	6.8	Brown SILTY SAND, little gravel	
LL7sd-029M	0.0	317.2	NP	NP	NP	39.8	2.1	3.7	13.8	27.7	44.5	52.7	8.2	Dark brown SANDY SILT, trace gravel	SM
LL8sd-001M	0.0	274.4	NP	NP	NP	26.1	0.6	5.2	11.2	10.8	54.4	72.3	17.9	Dark brown SILT WITH SAND, trace gravel	ML
LL8sd-002M	0.0	281.4	NP	NP	NP	20.8	3.4	7.9	6.8				20.7	Tank Stown Old Williams, trace graves	ML
LL8sd-003M	0.0	140.8	NP	NP	NP	11.1	0.4	3.4					19.3	Gray SANDY SILT, trace gravel	ML
LL8sd-006M	0.0	60.9	NP	NP.	NP	5.8	4.4						18.9	ordy of the Folia, trace graver	ML
		<u> </u>						7.2.	11.1	44.4	31.1	56.0	10.9	Gray SANDY SILT, trace gravel	ML



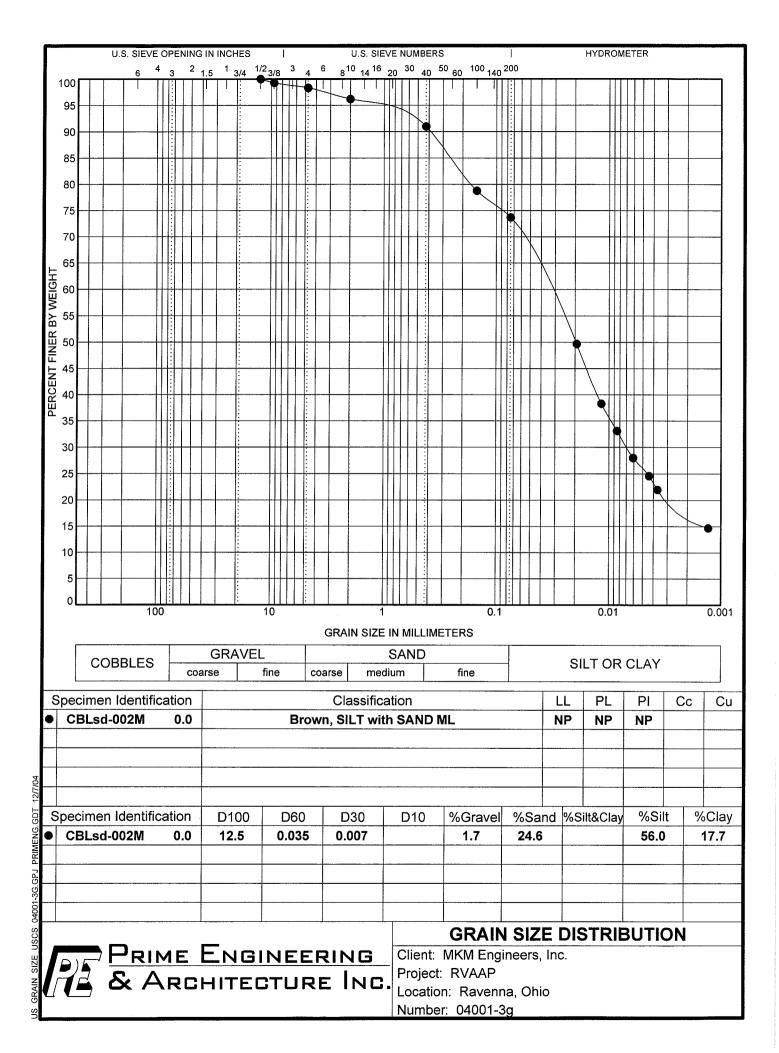
Project: RVAAP

Location: Ravenna, Ohio

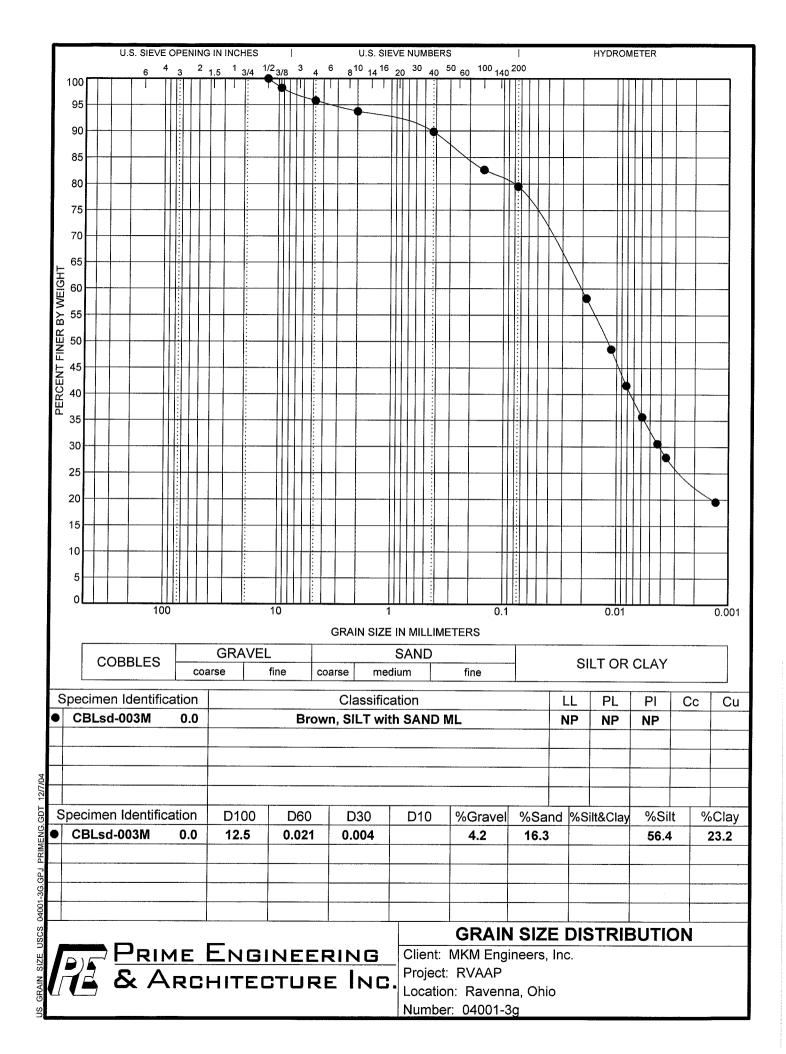
Location ID CBL S Date: 11-9-	d-00 04	1M-SD	Fiel	d Sampling l	Report				Ammunition f 14 RVAAP	
			Sa	mpling Inform	ation	· ***				
Source	Gro	undwater / Product		Surface Wa	ter	Sol	lls / Sedimer	īts / Slud	ge	
Method	Bailer	X	San	ple Bottle		Scoop		Trowe	1	
	Pump		Bac	on Bomb		Bowl		Hand A	Auger	
						Push Probe	X	Plastic	Liner	V
Type/Construction					1	Mattocks				1
Miscellaneous	Well Purg	ing Form		/			<u> </u>	,		
Sample Collection: 1505 Sample Depth: 0-0.5		Sample Type: Co	omposite f MI, # dicated	e - M - Grab of increments taken: - Each Day - Rack	30 Location	Location			Staked in Field asured - Surv	
Field Parameters (at time of sample)		Ana	lytical	Parameters		O	ther Para	meters	;	
PID'/ FID Readings:		VOC		TPH GRO		Corrosivity				T
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	yanide			
	0.0	Explosives	X	Chromium +6	1	Ignitability				
Sample: O) O ppm	Propellants		Nitrate			-			
Water Level	FT	TAL Metals	X		/:		QA Sam	ples		A Company of the Comp
Temperature	°c	Pesticides/PCBs				/MSD	Yes / No		N	ĪА
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID		and a second	N/	A
рН	units	TOC	X			Equipment Rinse ID			N/	A
Turbidity	N.T.U.	Grain Size	/-			Trip Blank ID			N.A	A
Soil sample description should Munsell Color Odor Stater sample description should Color Odor Sheen To	d include:	Sorting Plasticity Moist) /	sit Tal		ID:		Field Blan		
ogsed By: Stephen S	stera eoch	(Places Print)	re one safetime		Paria	wed by: Fuc	Si 2 1 S		(Qlans	a Print)
ignature:	Henry Por	(Please Print)				wed by:	ew)	Date	1:1	e Print)



Location ID: CBL	5d-0	002M-SD	Field	l Sampling F	Report			a Army Ammunition I zation of 14 RVAAP A	
Date: / 9 /	04								
			Sai	mpling Informa	ation				
Source	Grou	undwater / Product		Surface Wat	er	Soi	ls Sedimen	ts Sludge	
Method	Bailer		Samp	ole Bottle	A	Scoop		Trowel	
	Pump		Baco	n Bomb		Bowl .		Hand Auger	
						Push Probe	X	plastic liner	X
Type/Construction									
Miscellaneous	Well Purg	ing Form							
Sample Collection: 1400 hrs		Sample Type: Con	mposite	MI Grâb	20	Location:	Plotted on	Map Staked in Field Measured - Surveyed	
Sample Depth: <u>() -0.5</u> FT (below surfac	e) Decon: Dec	MI, # of licated •	increments taken: - Each Day Each	Location		Estimated -	Measured - Surveyed	1
Field Parameters (at time of sample)		il		Parameters		О	ther Para	meters	
PID / FID Readings:		VOC		TPH GRO		Corrosivity			
Background:) ppm	SVOC	X	TPH DRO		Reactivity Sulfide/Cy	vanide		
		Explosives	X	Chromium +6	\times	Ignitability			
Sample: O . C	> ppm	Propellants	X	Nitrate					
Water Level	F T	TAL Metals	X				QA Sam	ples	/
Temperature	°C	Pesticides/PCBs	X			MS/MSD	Yes / No	NA	1
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID		NA	
рН	units	тос	X			Equipment Rinse ID		NA	
Turbidity	N.T.U.	Grain Size	X			Trip Blank ID	690001000000000000000000000000000000000	NA	sobolo ogs bour
- Low plasti	sity	15%, 5an		e f	Agency/Con Address:		Sample		
Soil sample description should inc Munsell Color Odor Stainin Water sample description should in Color Odor Sheen Turbia	lude: ng Texture nclude:	© Q D − 5] Sorting Plasticity Moiste				vided: MS/MSD - Duplicate Same as Above - As		Field Blanks	
Logged By: James Signature: James	Pano 3 2	Z Zo (Please Print)			-	ewed by: FAC	FJUS 21	Date: 2/4/04	Print)



Location ID: CBL Sa	d-00	3M-5D	Field	d Sampling I	Report			a Army Ammunition 1	
Date: 11/8/0	4						Characteriz	cation of 14 RVAAP A	AOCs
			Sai	mpling Inform	ation				
Source	Grei	undwater / Product		Surface Wa	ter	Soi	ils / Sediment	s / Sludge	
Method	Bailer		Sam	ole Bottle		Scoop		Trowel	X
	Pump		Bacc	n Bomb		Bowl		Hand Auger	
						Push Probe		plastic liner	X
Type/Construction			200 d 200 d 200 d					1	
Miscellaneous	Well Purg Yes - No	ing Form	/						
Sample Collection: 1540 hrs		Sample Type: Co	mposite	-MI)- Grab	//)	Location:	(lotted on N	Map - Staked in Field Measured - Surveyed	
Sample Depth: <u>d-0.5</u> FT (below surfac	e) Decon: De	MI, # of dicated -	increments taken: _ - Each Day - Each	Location		Estimated -	Measured - Surveyed	1
Field Parameters (at time of sample)		Ana	lytical	Parameters		О	ther Para	meters	/
PID / FID Readings:		VOC		TPH GRO		Corrosivity			
Background:	> ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	vanide		
		Explosives	X	Chromium +6	\times	Ignitability			
Sample: O, O	ppm	Propellants		Nitrate					
Water Level	FT	TAL Metals	X				QA Samp	oles	/
Temperature	°C	Pesticides/PCBs				MS/MSD	Yes / No	NA	λ .
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID		NA	
рН	units	TOC	X			Equipment Rinse ID		NA	
Turbidity	N.T.U.	Grain Size	$ \chi $			Trip Blank ID		NA	
Organic odo	Sample 100	e Description, Staining gained, n	ار د.	Sorted	Split Sample		Sample		
Tow plasticit		vet clay			Agency/Com Address:	pany:			
Trace of sand	_								
Increments a Size of MI	re < grid	:30 due to	sn	7a1	Parameters:	ided: MS/MSD - Duplicate Same as Above - As		Field Blanks	112 112 112 112 112 112 112 112 112 112
Soil sample description should incl	lude:	*			100000000000000000000000000000000000000				
Munsell Color Odor Stainin	g Texture	Sorting Plasticity Moist	ure		·				
Water sample description should in	iclude:								
Color Odor Sheen Turbid	ity	et marineste e en						IN CORN	
Logged By: James 1	Jano	220 (Please Print)			Revie	ewed by: FOLC	EUS	(Please	Print)
Signature: 9m55	1	36			Sig	nature: <u>Wh</u>	<u> </u>	_ Date: 2/4/04	



12/6/04
SUMMARY 04001-3G.GPJ PRIMENG.GDT 1
04001-3G.GPJ
SUMMARY
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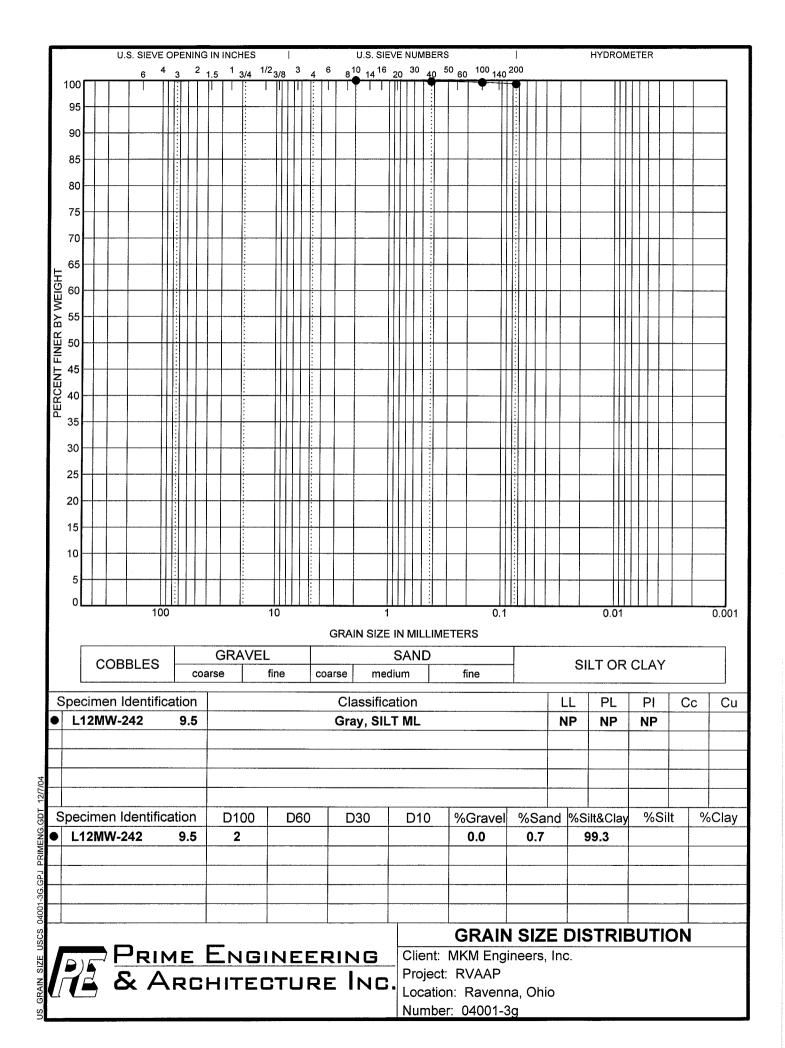
Sample Number	Depth (feet)	Moisture Content	Liquid Limit %	Limit		Organic Content	Agg.	C Sand	M Sand	F Sand	Silt	Silt&Clay Comb.	Clay	Soil Description	Class.
ASYsd-024M	0.0	228.4	NP	NP	NP	9.3	— <u>%</u> 0.0	_%_	<u>%</u>	%	%				Symbo
B12sd-023M	0.0	116.7				6.8	1.7	0.5	4.8				25.4	Cray SILT, little salld	ML
B12sd-024M	0.0	189.1	NP	NP	NP	11.7	0.7		3.3				31.9	oldy EE/ III OEA! WITH SAND, trace gravel	CL
CBLsd-001M	0.0	45.2	NP	NP	NP	3.3	6.4	9.5	4.4				23.7	Dark gray SILT WITH SAND, trace gravel	ML
CBLsd-002M	0.0	34.9	NP	NP	NP	3.5		5.8			-		16.9	L. CANTONIO I GILI, LIACE GIAVEI	ML
CBLsd-003M	0.0	62.2	NP	NP	NP	3.5	1.7	2.1	5.2				17.7	Signification of the state of t	ML
L12MW-242	9.5	19.1	NP	NP	NP	4	4.2	2.1			56.4		23.2	Brown SILT WITH SAND, trace gravel	ML
L12MW-242	13.5	27.5	NP	NP	NP		0.0	0.0	0.2	0.5		99.3		Gray SILT, trace sand	ML
L12MW-244	7.5	17.1	33	22	11		0.0	0.0	0.0	0.0		100.0		Gray SILT	ML
LL7sd-012M	0.0	36.8	NP	NP	NP.		0.3	1.9	4.9	12.8		80.1		Brown LEAN CLAY WITH SAND, trace gravel	CL
LL7sd-029M	0.0	317.2	NP	NP	NP NP	5.9	12.6	16.2				L		Brown SILTY SAND, little gravel	SM
LL8sd-001M	0.0	274.4	NP	NP		39.8	2.1					52.7		Dark brown SANDY SILT, trace gravel	ML
LL8sd-002M	0.0	281.4	NP	NP	NP	26.1	0.6	5.2					17.9	Dark brown SILT WITH SAND, trace gravel	ML
LL8sd-003M	0.0	140.8	NP		NP	20.8	3.4	7.9					20.7	Gray SANDY SILT, trace gravel	ML
LL8sd-006M	0.0	60.9	NP	NP N	NP	11.1	0.4						19.3	Gray SANDY SILT, trace gravel	ML
		1 30.3	INF	INP.	NP	5.8	4.4	4.2	11.1	24.4	37.1	56.0	18.9	Gray SANDY SILT, trace gravel	ML

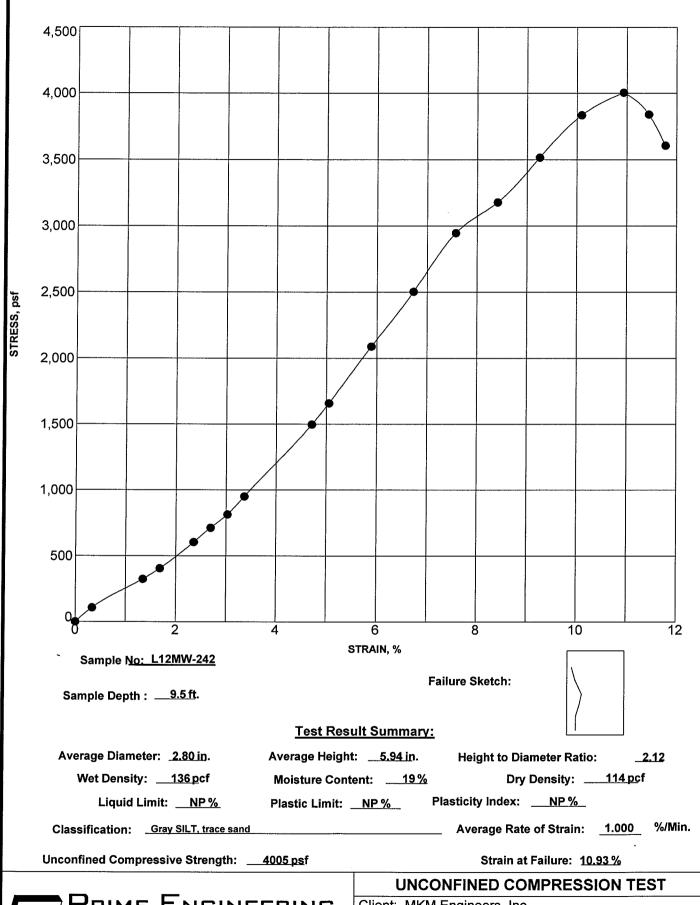


Project: RVAAP

Location: Ravenna, Ohio

Location ID: LIZM. Date: 11-10	w- 242)- 04	<u>; (8-10A)</u>	Field	d Sampling R	leport			na Army Ammun rization of 14 RV		
			Sa	ampling Informa	ation					
Source	Grou	ındwater / Product		Surface Wat	ier	Soi:	ls) Sedime	nts / Sludge		
Method	Bailer		Sam	nple Bottle		Scoop		Trowel		
	Pump		Bac	on Bomb		Bowl		Hand Auger		
		•				Push Probe		Shelby Tube	- V	
Type/Construction							1			
Miscellaneous	Well Purgi Yes - No	ing Form								
Sample Collection: 1525 i		· · · · ·	If MI, # 0	te - MI - Grab of increments taken: - Each Day - Each	Location	Location		on Map Staked in ed - Measured -		
Field Parameters (at time of sample)			alytical	l Parameters		Other Parameters				
PID / FID Readings:		VOC		TPH GRO		Corrosivity				
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cyanide				
		Explosives	Chromium +6			Ignitability				
Sample:	ppm	Propellants	Nitrate							
Water Level	FT	TAL Metals		Geotechnical	~		QA Sam	nples		
Temperature	°C	Pesticides/PCBs				MS/MSD	Yes / No	o	NA	
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID			NA	
pH	units	TOC				Equipment Rinse ID			NA	
Turbidity	N.T.U.	Grain Size	V		1	Trip Blank ID			NA	
Soil sample description should Munsell Color Odor Stat Water sample description should Color Odor Sheen Tur	l include: nining Texture	Sorting Plasticity Mo			D: (20)		- Field Blanks			
Logged By: ELIC E	=uus	(Please Print	t)		Revie	wed by: Sye	Boles		(Plcase Print)	
Signature:	3 1	`	,			nature:	Bale	Date: 06		





Prime Engineering & Architecture Inc.

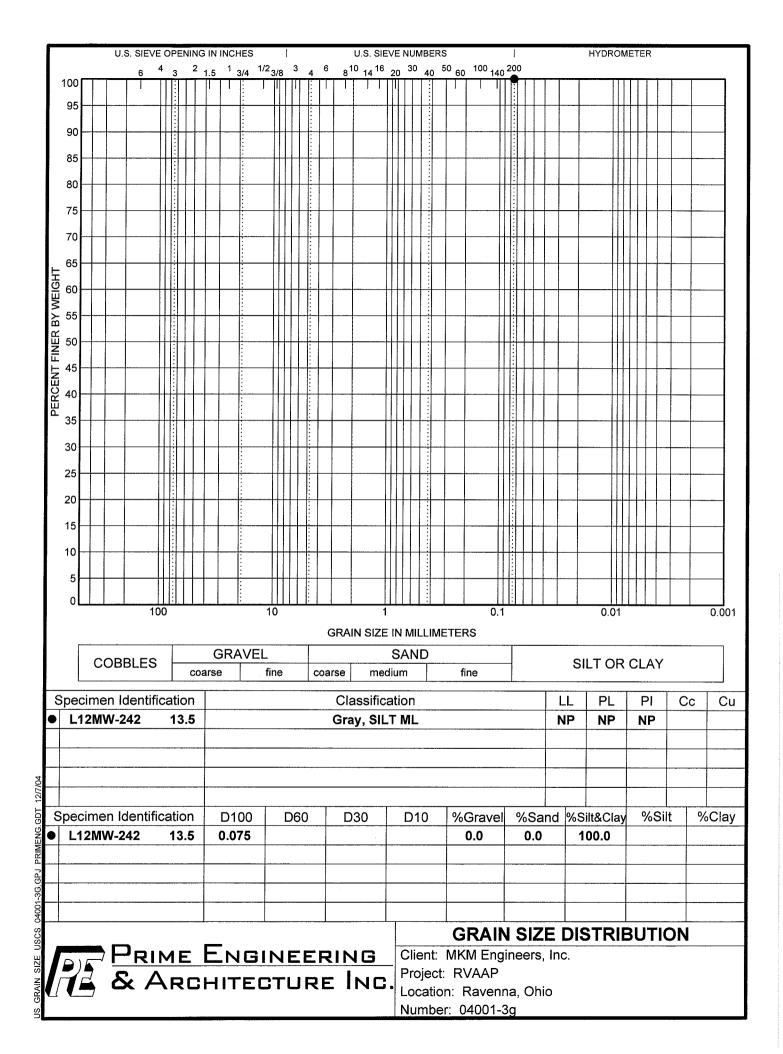
Client: MKM Engineers, Inc.

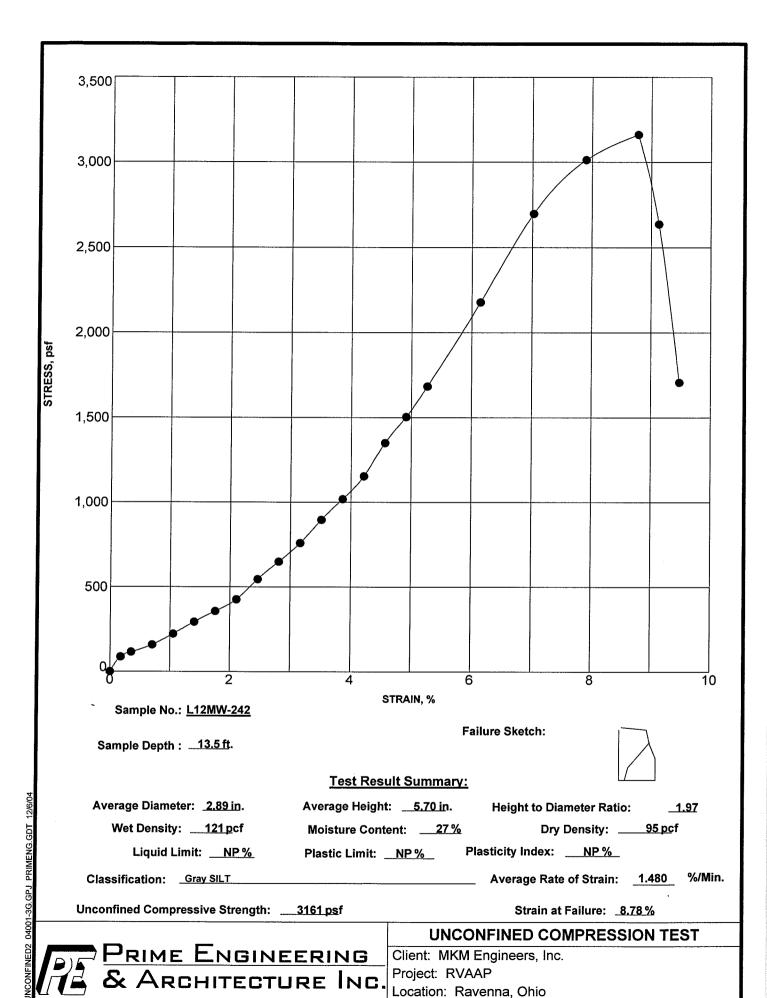
Project: RVAAP

Location: Ravenna, Ohio Number: 04001-3g

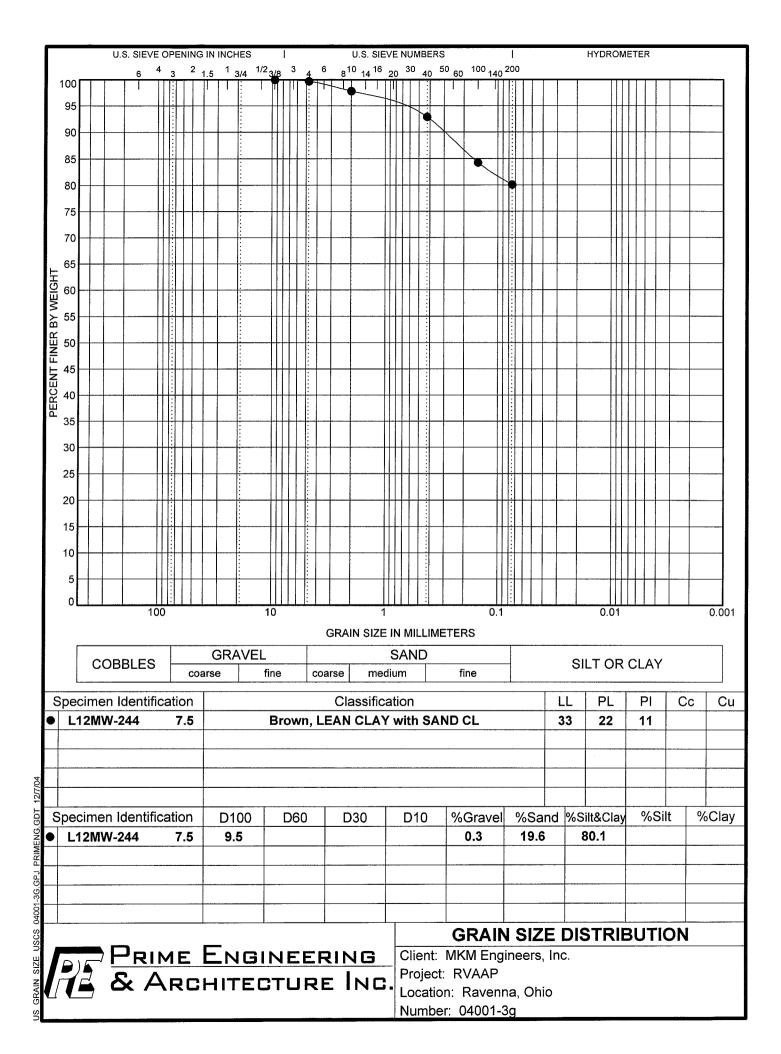
Location ID: L12mw - 242 (12-14ft) Field Sampling Report Ravenna Army Ammunition Plant Characterization of 14 RVAAP AOCs													
Date: 11-10-6	4												
Sampling Information													
Source	Grou	ndwater / Product		Surface Wat	er	Soils Sediments / Sludge							
Method	Bailer		Samp	le Bottle		Scoop		Trowel	Trowel				
		Baco	n Bomb		Bowl		Hand Au	uger					
		<u> </u>				Push Probe		Shelby T	Гube	~			
Type/Construction													
Miscellaneous													
Sample Collection: 1530 hrs		Sample Typ	Estimated - Measured - Surveyed										
Sample Depth: 12-14 FT	(below surfac			- Each Day - Each	Location								
Field Parameters (at time of sample)			Analytical	Parameters		O	ther Para	meters					
PID / FID Readings:	4	VOC		TPH GRO		Corrosivity							
Background:		SVOC		TPH DRO		Reactivity Sulfide/Cy	anide						
		Explosives		Chromium +6		Ignitability							
Sample:	ppm	Propellants		Nitrate									
Water Level	FT	TAL Metals		Geotechnical		QA Samples				•			
Temperature	°C	°C Pesticides/PCBs				MS/MSD Yes / No			NA				
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID			NA	1			
рН	units	TOC				Equipment Rinse ID			NA				
Turbidity	N.T.U.	Grain Size				Trip Blank ID			NA	L			
	Sampl	e Description		Split Sample Split Sample ID: Name: Agency/Company: Address:									
Soil sample description should in		Sorting Plasticity			vided: MS/MSD - Duplicate Same as Above - As								
Water sample description should Color Odor Sheen Turb													
the second of th	EUS	(Please	Print)		Revie Sig	ewed by: SUC nature: Sue Do	Boles les	Date:	(Please	Print)			

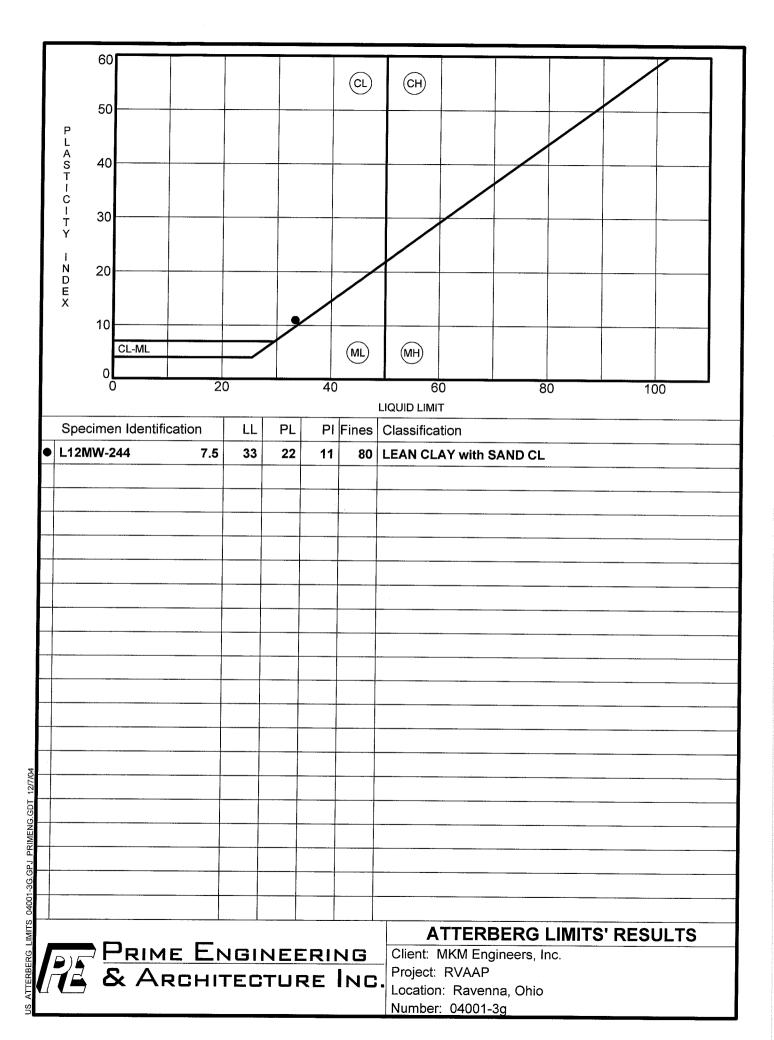
Signature: SESI

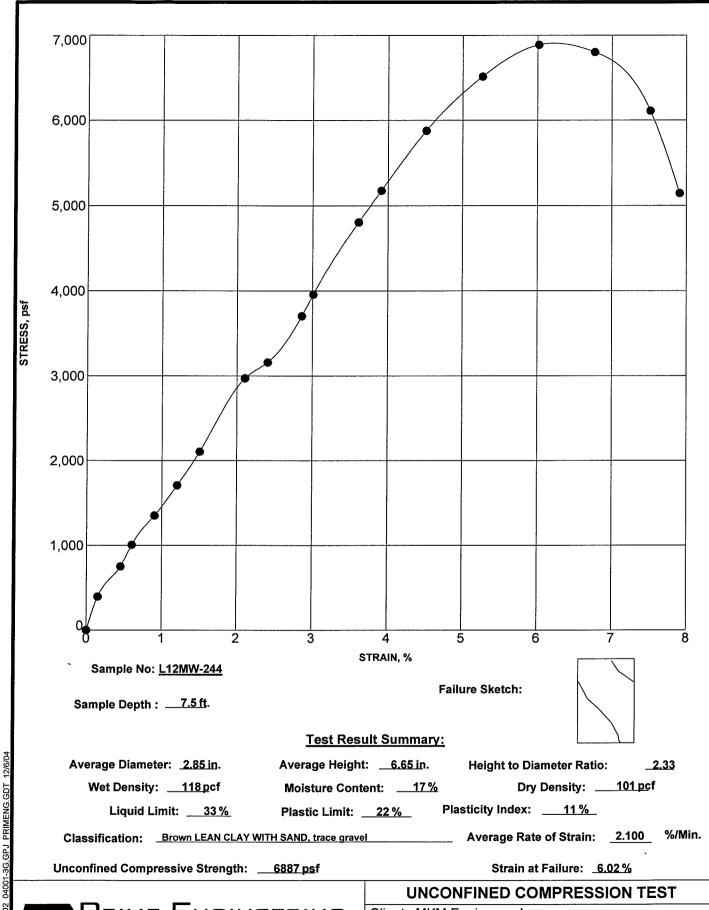




Location ID: L12 mw - 244 (6-8 ft) Field Sampling Report Ravenna Army Ammunition Plant Characterization of 14 RVAAP AOCs Date: 11-10-04													
Sampling Information													
Source	Grou	ndwater / Product		Surface Wat	er	Soils Sediments / Sludge							
Method	Bailer		Samı	ole Bottle		Scoop		Trowel					
		Baco	n Bomb		Bowl	Hand Auger		Auger					
						Push Probe		Shelb	y Tube	~			
Type/Construction						,							
Miscellaneous	Well Purg Yes - No	ing Form											
Sample Collection: 6725 hrs Sample Type: Composite - MI - Grab 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)						Other Parameters							
PID / FID Readings:		VOC	TPH GRO			Corrosivity				-			
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cyanide							
		Explosives	Chromium +6			Ignitability							
Sample:	ppm	Propellants	Nitrate										
Water Level	FT	TAL Metals		Geotechnical	V		QA Samples						
Temperature	°C	Pesticides/PCBs				MS/MSD	MS/MSD Yes / No			ÍΑ			
Sp. Conductance:	uMHOs	Cyanides	yanides				NA		١				
рН	units	TOC				Equipment Rinse ID			N.A	١			
Turbidity	N.T.U.	Grain Size	V			Trip Blank ID			NA	١			
	Sampl		Split Sample Split Sample ID: Name: Agency/Company: Address:										
Soil sample description should in		QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks Parameters: Same as Above - As Listed											
Water sample description should	l include:												
Color Odor Sheen Turb	oidity	the second secon	and the second	er i - VIII II Zasandan Wangsan akang tang			~						
Logged By:	Fus	(Please Print))		Revie	ewed by: <u>SUE</u> nature: Lee Bo	Boles		06/ ₅	e Print)			
Signature:	= N	Sig	nature: Lee Bo	les	Da	te:	/ 05						







Prime Engineering & Architecture Inc.

Client: MKM Engineers, Inc.

Project: RVAAP

Location: Ravenna, Ohio

Prime Engineering & Architecture

Project No.: 04001G
Project: RVAAP
Client: MKM Engineers
Technician(s): Stephanie and Brandi
Date: 12/6/2004

Sample No:	pH Reading:	Specific Gravity:
L12MW-242 8-10'	8.0	2.748
L12MW-244 6-8'	8.2	2.780
L12MW-242 12-14'	7.9	2.780

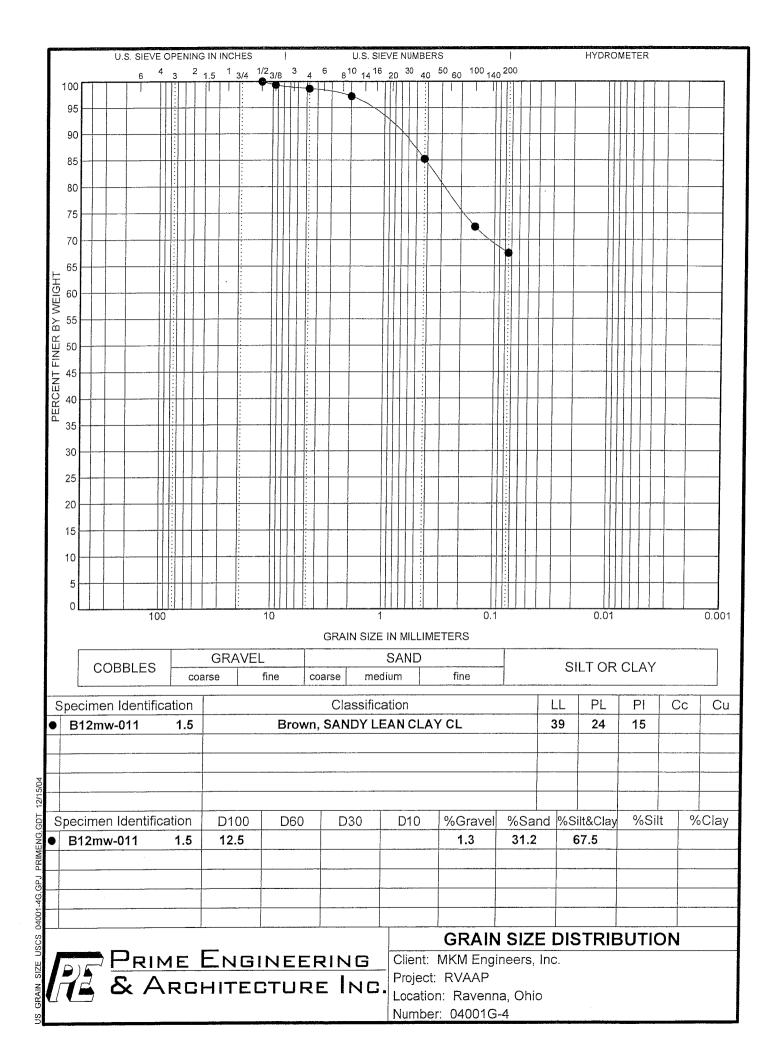
Sample Number	Depth (feet)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plast. Index	Organic Content (%)	Agg.	C Sand %	M Sand %	F Sand %	% IIIS	Clay	Soil Description	Class. Symbol
B12mw-011	1.5	23.2	39	24	15		1.3	1.4	12.0	17.8	67	5	Brown SANDY LEAN CLAY, trace gravel	CI

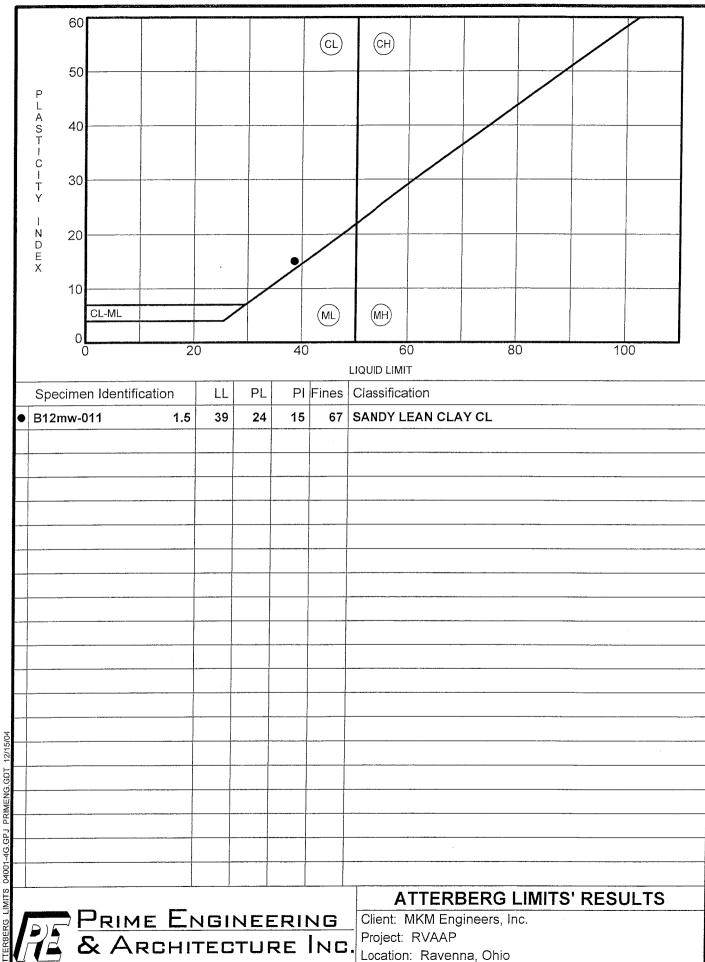


Project: RVAAP

Location: Ravenna, Ohio

Location ID: <u>812-m</u> Date: <u>11-19-0</u>		(0-ZA)	Field	l Sampling R	Report			a Army Ammunitic zation of 14 RVAA		
			Sai	mpling Informa	ition					
Source	Grou	ındwater / Product		Surface Wat	er	Soils/ Sediments / Sludge				
Method	Bailer		Samı	ple Bottle		Scoop		Trowel		
	Pump		Baco	n Bomb		Bowl		Hand Auger		
						Push Probe		Shelby Tube	V	
Type/Construction	/pe/Construction							<u> </u>		
Miscellaneous	Well Purg Yes - No	ing Form								
Sample Collection: 1250 hr	rs	Sample Type		e - MI - Grab)	Location		Map Staked in Field - Measured - St		
Sample Depth: 0-2 FT	(below surfac	Decon:		- Each Day - Each	Location	T ****				
Field Parameters (at time of sample)			Analytical	Parameters		O	ther Para	nmeters		
PID / FID Readings:	·	VOC		TPH GRO		Corrosivity				
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/C	yanide			
		Explosives		Chromium +6		Ignitability				
Sample:	ppm	Propellants		Nitrate						
Water Level	FT	TAL Metals		Geotechnical		QA Samples				
Temperature	°C	Pesticides/PCBs				MS/MSD	Yes / No)	NA	
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID			NA	
рН	units	тос				Equipment Rinse ID			NA	
Turbidity	N.T.U.	Grain Size				Trip Blank ID			NA	
	Sampl	e Description		Split Sample Name: Agency/Con Address:	PD:	t Sample		X		
Soil sample description should i Munsell Color Odor Stain Water sample description should Color Odor Sheen Tur	ning Texture	Sorting Plasticity		v ided: MS/MSD - Duplicate Same as Above - A		- Field Blanks				
Logged By: ELL	EUS	(Please I	rint)		Revie	ewed by: SUCB nature: Luc K	gles	06/15	Please Print)	
Signature:	Z				Sig	nature: Sue K	olis -	Date:	10S	





Prime Engineering & Architecture

Project No.: 04001G Project: RVAAP

Client: MKM Engineers

Technician(s): Stephanie and Steve

Date: 12/9/2004

pH Reading: Specific Gravity: Sample No:

5.4 B12MW-011 0-2' 2.704

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	12/6/04	
1		
	TAIMENG	
000000	04001-3G.GPJ	
	SUMMARY	
0	CSCS	
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Sample Number	Depth (feet)	Moisture Content %	Liquid Limit %	Plastic Limit %		Organic Content (%)	Agg.	C Sand	M Sand		Silt	Silt&Clay Comb.	Clay	Soil Description	Class.
ASYsd-024M	0.0	228.4	NP	NP .	NP	9.3	0.0	% 0.5	4.8	9.4	60.0		% 25.4		Symbol
B12sd-023M	0.0	116.7				6.8	1.7	2.1						Gray SILT, little sand	ML
B12sd-024M	0.0	189.1	NP	NP	NP	11.7			3.3		ļ		31.9	Gray LEAN CLAY WITH SAND, trace gravel	CL
CBLsd-001M	0.0	45.2	NP	NP	NP		0.7	9.5	4.4				23.7	Dark gray SILT WITH SAND, trace gravel	ML
CBLsd-002M	0.0	34.9	NP			3.3	6.4	5.8	9.0				16.9	Brown SANDY SILT, trace gravel	ML
CBLsd-003M	0.0	 		NP	NP	3.5	1.7	2.1	5.2	17.3	56.0	73.7	17.7	Brown SILT WITH SAND, trace gravel	ML
L12MW-242		62.2	NP	NP	NP	4	4.2	2.1	3.9	10.3	56.4	79.5	23.2	Brown SILT WITH SAND, trace gravel	ML
	9.5	19.1	NP	NP	NP		0.0	0.0	0.2	0.5		99.3		Gray SILT, trace sand	ML
L12MW-242	13.5	27.5	NP	NP	NP		0.0	0.0	0.0	0.0		100.0		Gray SILT	
L12MW-244	7.5	17.1	33	22	11		0.3	1.9	4.9	12.8		80.1		Brown LEAN CLAY WITH SAND, trace gravel	ML
LL7sd-012M	0.0	36.8	NP	NP	NP	5.9	12.6	16.2	20.6			32.2	6.8		CL
LL7sd-029M	0.0	317.2	NP	NP	NP	39.8	2.1					52.7		Brown SILTY SAND, little gravel	SM
LL8sd-001M	0.0	274.4	NP	NP	NP	26.1	0.6						L	Dark brown SANDY SILT, trace gravel	ML
LL8sd-002M	0.0	281.4	NP	NP	NP								17.9	The state of the s	ML
LL8sd-003M	0.0	140.8	NP			20.8	3.4	7.9	6.8				20.7	Gray SANDY SILT, trace gravel	ML
LL8sd-006M				NP	NP	11.1	0.4	3.4					19.3	Gray SANDY SILT, trace gravel	ML
LLUSU-UUUIVI	0.0	60.9	NP	NP.	NP	5.8	4.4	4.2	11.1	24.4	37.1	56.0	18.9	Gray SANDY SILT, trace gravel	ML



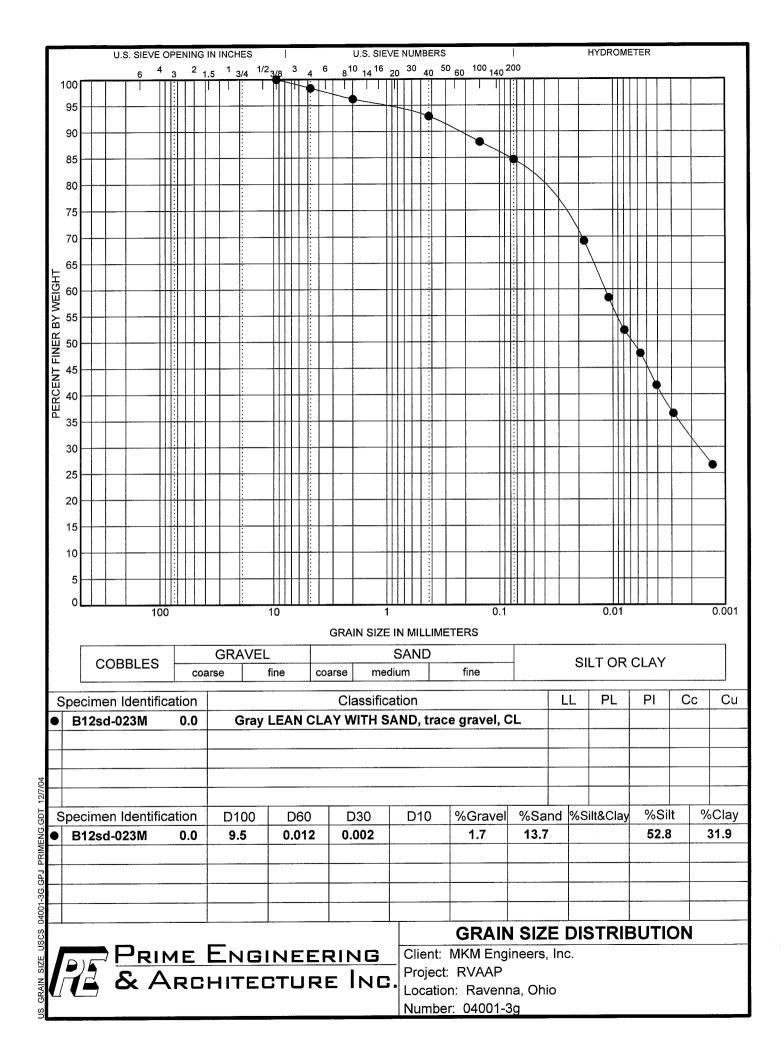
Summary of Laboratory Results Client: MKM Engineers, Inc.

Project: RVAAP

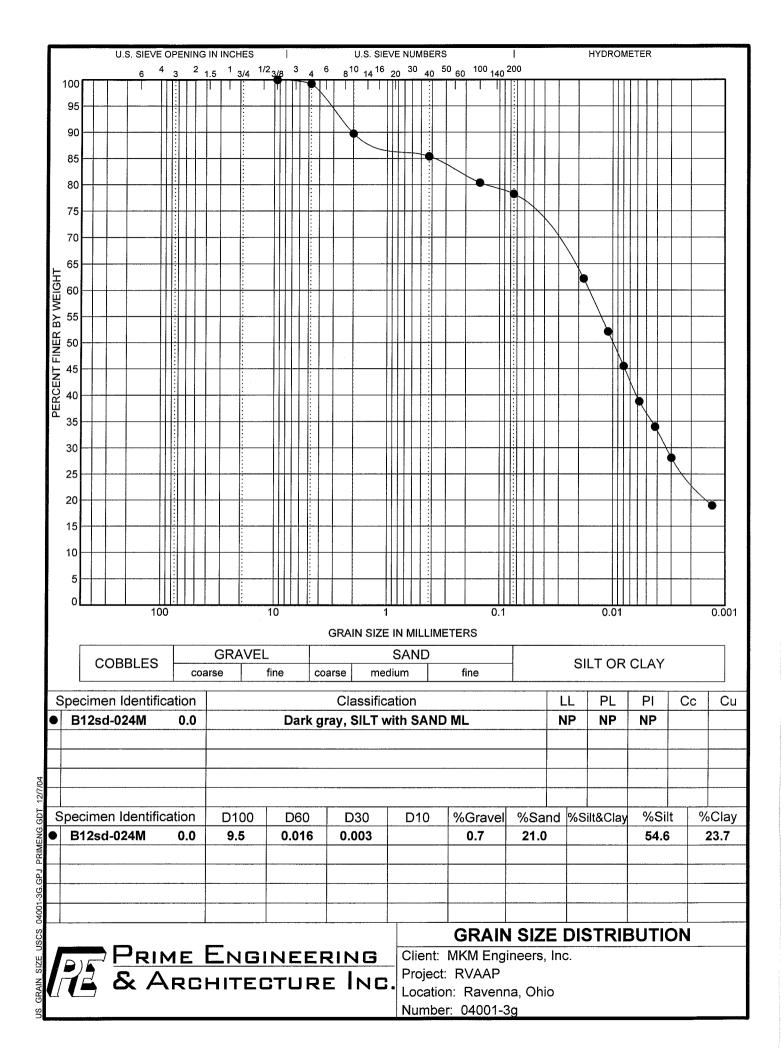
Location: Ravenna, Ohio

Number: 04001-3g

Location ID: <u>B/2</u> 5 Date:	-d-02 -24	<u>3M-SD</u>	Field	I Sampling I	Report			na Army Ammuniti ization of 14 RVA				
			Sa	mpling Informa	ation							
Source	Grou	ındwater / Product		Surface Wa	ter	Soi	le/Sedime	nts) Sludge				
Method	Bailer		Sam	ele Bottle		Scoop		Trowel	V			
	Pump		Ваєс	n Bomb		Bowl		Hand Auger				
				X		Push Probe		Plastic Liner	1			
Type/Construction						Mattocks						
Miscellaneous	Well Purg Yes - No	ing Form	1									
Sample Collection: 11:25 Sample Depth: 0-05 F]	If MI, # c	MI - Grab of increments taken: - Each Day - Each	SO Location	Location		n Map Staked in Fi ed - Measured - S				
Field Parameters (at time of sample)		Ana	lytical	Parameters		О	ther Par	ameters				
PID / FID Readings:		VOC		TPH GRO		Corresivity						
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/S	yanide					
	09	Explosives	1	Chromium +6		Ignitability						
Sample:	OO^{ppm}	Propellants		Nitrate								
Water Level	FT	TAL Metals	1			QA Samples						
Temperature	°c	Pesticides/PCBs				MS/MSD	Yes / No	No (NA)				
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID	B/25d-	023M-BUP	NA			
рН	units	TOC				Equipment Rinse ID						
Turbidity	N.T.U.	Grain Size	V			Trip Blank ID			(NA)			
Noodor, No 104R 4/5 howy hosti	Sample staining y we	e Description In FO'	12	ed Foi	Name: Agency/Com Address:	Splin B125d-C John Jew John Jew Jew John Jew Jew Jew Jew Jew Jew Jew Jew Jew Jew	f -Loui	sville so se auch				
Soil sample description should Munsell Color Odor Sta Water sample description shoul Color Odor Sheen Tu	ining Texture	Sorting Plasticity Moi	sture		QA/QC Prov	wided: MS/MSD - Duplicate Rame as Above As	- Trip Blanks					
Logged By: The half	Same	Please Print)			Revie	wed by: FRIC	ELUS		Please Print)			
Signature: // // Charles	17/1	ý <u></u>			Sign	nature: <u>202</u>	h_	Date: 2/1/	<u>05</u>			



									
21751	-174	$M_{-} \leq D$	Field	l Sampling F	Report		Ti oviani	na Army Ammunitio	· Dlant
Location ID: <u>B/25d</u> Date: <u>11/5/04</u>	UL-71	<u>1-10</u>						na Army Ammunition rization of 14 RVAA	
Date: /1/5/04								 	
			Sar	mpling Informa	etion				
Source	Grot	undwater / Product		Surface Wat	er	Soil	ls (Sedimer	nts / Sludge	
Method	Bailer		Sabu	ole Bottle		Scoop		Trowel	×
	Pump		Baco	n Bomb	7	Bowl		Hand Auger	
		$\overline{\chi}$				Push Probe		Plastic Liner	×
Type/Construction						Mattocks		Teflon Dipper	×
Miscellaneous	Well Purg Yes - No	ing Form	j						
Sample Collection: 10 20 hrs		Sample Type: Co	mposite	MI - Grab	-30	Location	Plotted or	n Map Saked in Fie	ld
Sample Depth: 0-0.5 FT (below surfac	(c) Decon: De		f increments taken: - Each Day - Each			Estimate	30 - Micasurca - pa	rveyeu
Field Parameters (at time of sample)		Ana	lytical	Parameters		O	ther Para	ameters	
PID / FID Readings:		VOC		TPH GRO		Corrosivity			
Background:	ррт	SVOC	V)	TPH DRO		Reactivity Sulfide/Cy	anide		
Q.	.0	Explosives		Chromium +6		Ignitability	><		
Sample: O	O ppm	Propellants		Nitrate					
Water Level	FT	TAL Metals		,			QA San	aples	
Temperature	℃	Pesticides/PCBs	V			MS/MSD	Yes / No	0	NA
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID			NA
рН	units	TOC	1/			Equipment Rinse ID]	NA .
Turbidity	N.T.U.				1 "				I
	N.1.0.	Grain Size	1			Trip Blank ID		1	NΑ
12-00 120	Sample	e Description			Salit Sample	Split	Sample		NA
No Odor, No	Sample Staining	e Description	- Che	21	Split Sample	Split	Sample		NA
No Odor, No	Sample Standing	e Description	x hea	24	Name: Agency/Com	Split	Sample		NA
non plantice	Sample Stanting	e Description	The state of the s	ed Ph	Name:	Split	Sample		NA
No Odor, No 1048 2/1, non playica some Silt	Sample Standing	e Description	X Fee	zd Fh	Name: Agency/Com	Split spany:	Sample		NA
non plantice	Sample Standing	e Description	X Fee	ed Fh	Name: Agency/Com Address:	Split Title: Spany: Addd: MS/MSD Quplicate	Trip Blanks		NA
non plantice	Sample Standing	e Description	2 pori	ed Fr	Name: Agency/Com Address:	Split D: Dany: Aided: MS/MSD Vuplicate			NA
non plantice	Sample Standing	e Description	x her	ed :	Name: Agency/Com Address:	Split Title: Spany: Addd: MS/MSD Quplicate	Trip Blanks		NA
non planico	Sample Staining	e Description	X Fee	zd Fr	Name: Agency/Com Address:	Split Title: Spany: Addd: MS/MSD Quplicate	Trip Blanks		NA
non planico	Sample	e Description)) \	z d	Name: Agency/Com Address:	Split Title: Spany: Addd: MS/MSD Quplicate	Trip Blanks		NA
1048 24 1000 Plantics Some Silt	Sample Standing Wet	e Description)) \	ZA YA	Name: Agency/Com Address:	Split Title: Spany: Addd: MS/MSD Quplicate	Trip Blanks		NA
Some Silt Some Silt Soil sample description should income Munsell Color Odor Staining	Sample Staining OVE clude: ng Texture include:	e Description)) \	ed .	Name: Agency/Com Address:	Split Title: Spany: Addd: MS/MSD Quplicate	Trip Blanks		NA
Soil sample description should incommunicate Munsell Color Odor Staining Water sample description should in Color Odor Sheen Turbic	Sample Staining OVE clude: ng Texture include:	e Description)) \	z d	Name: Agency/Com Address: QA/QC Prov Parameters:	Split Diany: Many: Mided: MS/MSD Suplicate Same as Above As	Trip Blanks	Field Blanks	NA sase Print)



Sample Number	Depth (feet)	Moisture Content		Plastic Limit %		Organic Content (%)	Agg.	C Sand %	M Sand %	F Sand %	Silt %	Silt&Clay Comb.	Clay %	Soil Description	Class. Symbol
LNWmw-024	5.7	17.2	34	20	14		1.8	1.5	5.4	16.3		75.1		Brown LEAN CLAY WITH SAND, trace gravel	CL
LNWmw-025	3.7	19.7	26	21	6		10.9	4.2	13.8	27.1		44.0		Brown SILTY, CLAYEY SAND, little gravel	SC-SM

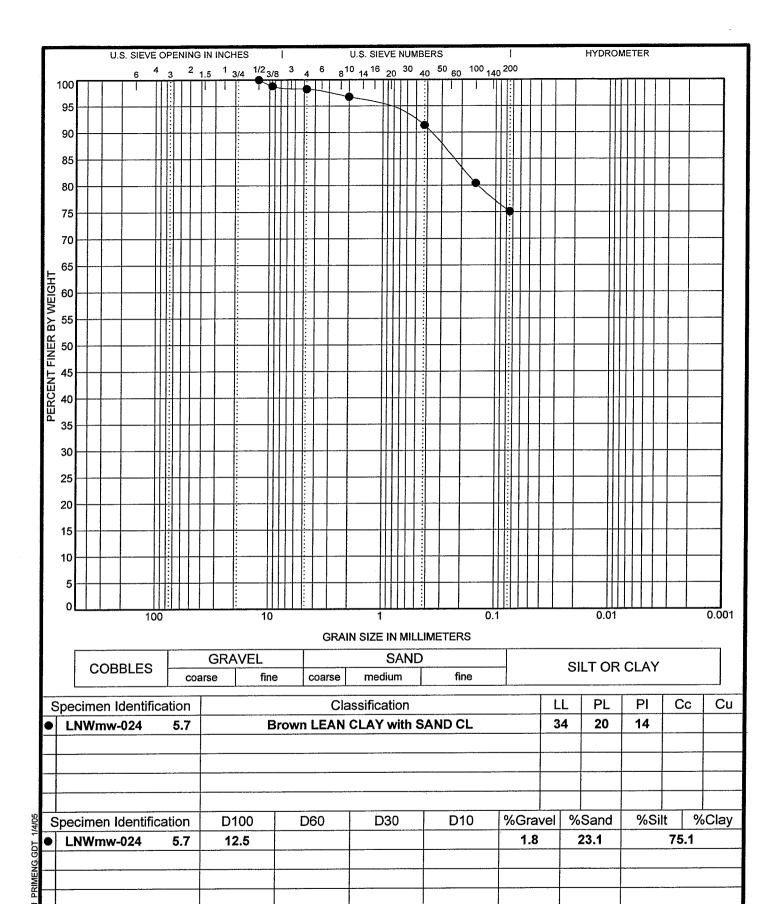


Summary of Laboratory Results Client: MKM Engineers, Inc.

Project: Characterization of RVAAP 14 AOCs

Location: Ravenna, Ohio Number: 04001-7G

Location ID:NWmy	N-024	(4-6ft)	Field	i Sampling R	Report	t			Army Ammunition I	
Date: 12 - 15	-04							Characteriz	AUDH OF 14 KVAAF A	iocs
			Sai	mpling Informa	ition					
Source	Grou	ndwater / Product		Surface Wat	er		Soi	Sediment	s / Sludge	
Method	Bailer		Sam	ple Bottle			Scoop		Trowel	
	Pump		Bacc	on Bomb			Bowl		Hand Auger	
		<u> </u>					Push Probe		Shelby Tube	-
Type/Construction										
Miscellaneous	Well Purg Yes - No	ing Form								
Sample Collection: 045 h	rs	Sample Type:		- MI - Grab			. Location	Plotted on	Map Staked in Field	
Sample Depth: 4-6 FT	`(below surfac	ee) Decon: I		of increments taken: - Each Day - Each	Location	<u> </u>		Estimated	- Measured - Surve	eyed
Field Parameters (at time of sample)		Aı	ıalytical	Parameters			О	ther Para	meters	
PID / FID Readings:		VOC		TPH GRO			Corrosivity			
Background:	ppm	SVOC		TPH DRO			Reactivity Sulfide/Cy	/anide		
ū		Explosives		Chromium +6			Ignitability	ramac		
Sample:	ppm	Propellants		Nitrate			-garantan,			
Water Level	FT	TAL Metals		Geotechnical	~			OA Sa	-1	
Temperature	°C	Pesticides/PCBs		Georgeninear			MS/MSD	QA Samp	pies N	Δ
Sp. Conductance:	uMHOs	Cyanides					Duplicate ID	165 / 110	NA NA	
pН	units	TOC					Equipment Rinse ID		NA	
Turbidity	N.T.U.	Grain Size	~				Trip Blank ID		NA	
Soil sample description should is Munsell Color Odor Stain Water sample description should	include: ning Texture d include:	Sorting Plasticity M.		Addre	: cy/Con ess: C Pro					
Color Odor Sheen Turi		P (N				Р	S.10	Ralac		
Signature: Assignature:	Eur Eur	(Please Pri	nı)				ewed by: Sue nature: SueBo	Boles		Print)



PRIME ENGINEERING & ARCHITECTURE INC.

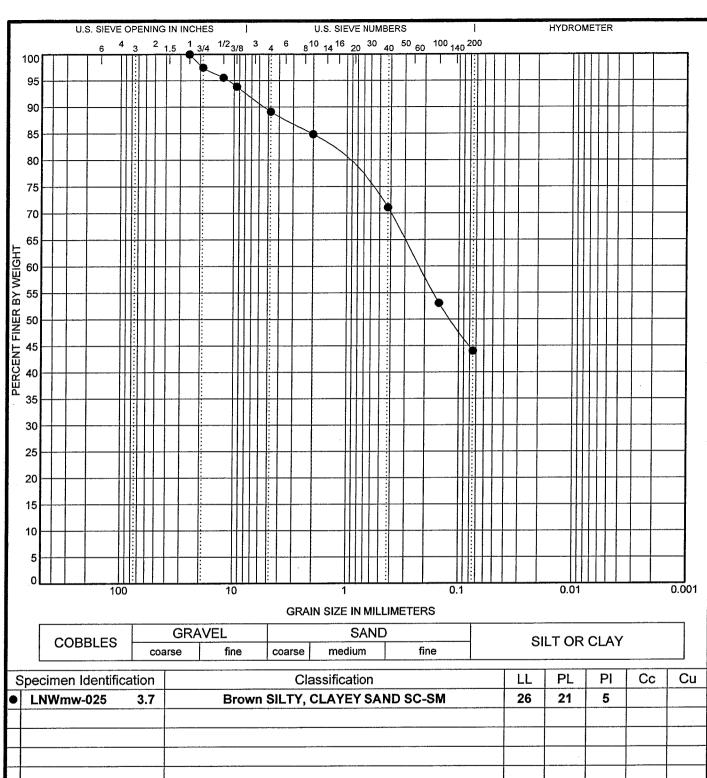
GRAIN SIZE DISTRIBUTION

Client: MKM Engineers, Inc.

Project: Characterization of RVAAP 14 AOCs

Location: Ravenna, Ohio Number: 04001-7G

Location ID: LNWm.v	u-025	(2-4fr)	Field	l Sampling R	Report			a Army Ammunitio ization of 14 RVAAI	
			Sai	mpling Informa	tion				
Source	Grou	ndwater / Product	Jaj	Surface Wat		Soil	Sedimen	nts / Sludge	
Method	Bailer	1	Sami	ple Bottle		Scoop		Trowel	
	Pump		COLCUM	n Bomb		Bowl		Hand Auger	
	1					Push Probe		Shelby Tube	
Type/Construction					1	*******			
Miscellaneous		ing Form							
Sample Collection: 1325 hrs Sample Depth: 2-4 FT (If	MI, # c	r - MI - Grab of increments taken: - Each Day - Each) Location	Location	Plotted or Estimate	n Map Staked in Fie d - Measured - Su	d > veyed
Field Parameters (at time of sample)		Anal	ytical	Parameters		O	ther Para	ameters	
PID / FID Readings:		VOC		TPH GRO		Corrosivity			
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	anide		
		Explosives		Chromium +6		Ignitability			
Sample:	ppm	Propellants		Nitrate					
Water Level	FT	TAL Metals		Geotechnical			QA Sam	ıples	
Temperature	°C	Pesticides/PCBs				MS/MSD	Yes / No)	NA
Sp. Conductance:	e Groundwat od Bailer Pump Construction Illaneous Well Purging Fores No e Collection: 1325 hrs le Depth: 2-4 FT (below surface) Parameters e of sample) FID Readings: Background: SVC Expl Sample: ppm Prop Prop Level FT TAL erature °C Pestivation of the sample description should include: unstell Color Odor Staining Texture Sorting Sample description should include: sample description should include: unstell Color Odor Sheen Turbidity					Duplicate ID]	IA
рН	units	TOC				Equipment Rinse ID]	ĪΑ
Turbidity	N.T.U.	Grain Size	~			Trip Blank ID]	ΙA
	Sampl	e Description			Split Sample Name: Agency/Con Address:)D:	Sample		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
Water sample description should	ing Texture include: idity	Sorting Plasticity Mois	ture		Parameters:	vided: MS/MSD - Duplicate Same as Above - As			ase Print)
Signature: Oweld	Ear	rest				nature: Jub	es	Date: 06/18	105



_										
•	LNWmw-025 3.7	Br	own SILTY, (CLAYEY SAN	ND SC-SM		26	3 21	5	

 S	 Specimen Identification	D100	D60	D30	D10	%Gra	vel	%Sand	%Silt	%Clay
•	LNWmw-025 3.7	25	0.224			10.9	9	45.1	4	4.0
							_			
_										
\dashv		***************************************								
- 1				1		1		1		

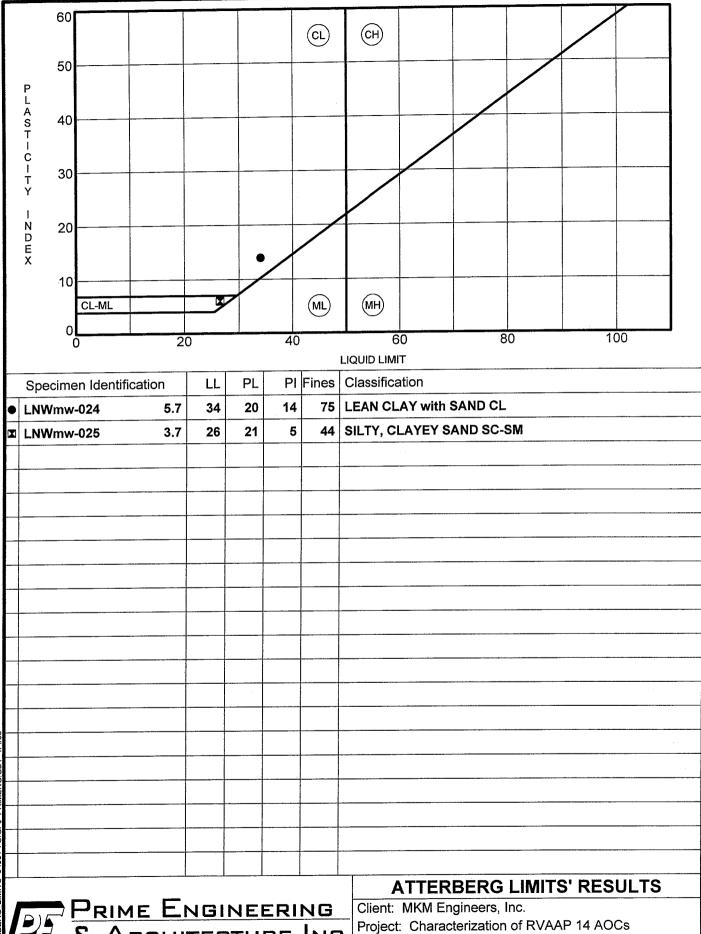


GRAIN SIZE DISTRIBUTION

Client: MKM Engineers, Inc.

Project: Characterization of RVAAP 14 AOCs

Location: Ravenna, Ohio Number: 04001-7G



PRIME ENGINEERING & ARCHITECTURE INC.

Location: Ravenna, Ohio Number: 04001-7G

Prime Engineering & Architecture

Project No.: 04001G Project: RVAAP

Client: MKM Engineers
Technician(s): Stephanie and Brandi
Date: 1/4/2005

Sample No:	pH Reading:	Specific Gravity:
LNWmw-024	7.1	2.744
LNWmw-025	7.6	2.740

12/1/04
GDT
PRIMENG.
24001-2G.GPJ
S SUMMARY (
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LAB
US

Sample Number	Depth (feet)	Moisture Content	Liquid Limit %	Plastic Limit	Plast. Index	Organic Content (%)		C Sand %	M Sand	F Sand %	Silt	Silt&Clay Comb.	Clay	Soil Description	Class. Symbo
F16sd-001M	0.0	33.7				3.4	0.3	1.7					26.6	Brown LEAN CLAY WITH SAND, trace gravel	
F16sd-002M	0.0	193.0				9.7	1.0	1.0			ļ	·	24.4	The state of the s	CL
LL8sd-004M	0.0	169.9	NP	NP	ND									Diagnetic VIIII OAND, trace graver	CL
					NP	15	1.2	1.2	8.6	29.9	41.9	59.1	17.1	Mottled brown and gray SANDY SILT, trace gravel	ML
LL8sd-005M	0.0	108.2	NP	NP	NP	8.2	1.9	5.1	13.4	22.4	38.1	57.1	19.1		ML
LNWsd-043M	0.0	120.2	ΝP	NP	NP	5.8	0.8	1.2	8.7	25.3	493	63.0	14.6		
LNWsd-044M	0.0	111.3	NP	NP	NP					+	ļ			oldy of the Foliat, trace graver	ML
				ļ	INP	7.5	0.0	1.0	13.8	28.3	41.2	56.9	15.8	Gray SANDY SILT	ML
LNWsd-045M	0.0	140.8	NP	NP	NP	9.4	1.0	3.0	13.7	19.2	46.8	63.2	16.4		
LNWsd-046M	0.0	132.5	NP	NP	NP	7.9	0.0	0.3		+		-		ordy of the foliation graves	ML
		1			141	1.5	0.0	0.3	5.2	17.4	57.6	17.1	19.4	Gray SILT WITH SAND	ML

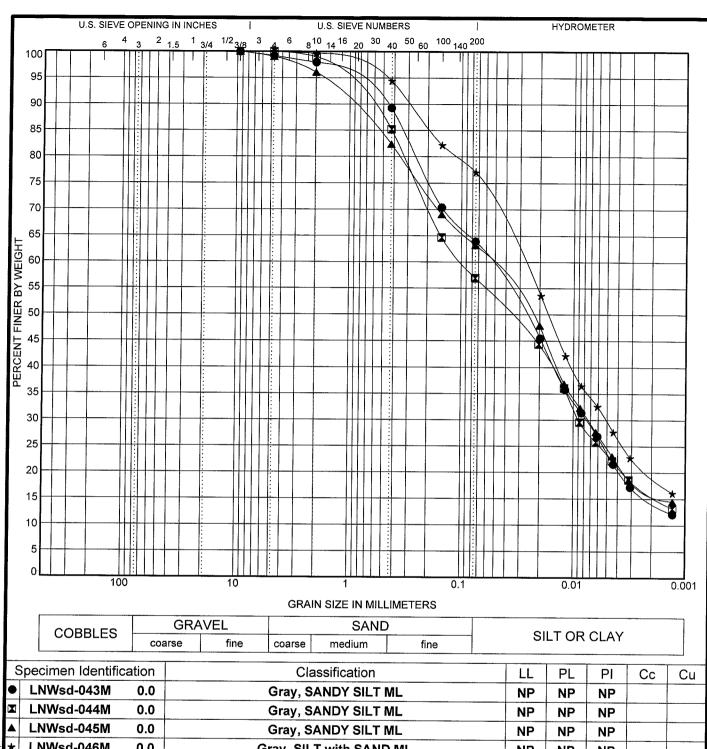


Summary of Laboratory Results Client: MKM Engineers

Project: RVAAP

Location: Ravenna, Ohio

Number: 04001-2G



	S	Specimen Identific	cation			Classific		LL	PL	PI	Сс	Cu		
l	•	LNWsd-043M	0.0		Gr	ay, SAND	SILT ML			NP	NP	NP		
	X	LNWsd-044M	0.0		Gr	ay, SAND		NP	NP	NP				
Ŀ	A	LNWsd-045M	0.0		Gr	ay, SAND		NP	NP	NP				
Ŀ	*	LNWsd-046M	0.0		Gray	, SILT wit	h SAND N	1L		NP	NP	NP		
L	S	pecimen Identific	ation	D100	D60	D30	D10	%Gravel	%San	d %5	Silt&Clay	%Sil	t 9	6Clay
Ŀ	•	LNWsd-043M	0.0	9.5	0.056	0.008		8.0	35.2			49.3		14.6
0	X	LNWsd-044M	0.0	4.75	0.099	0.009		0.0	43.1			41.2		15.8
Ŀ	A	LNWsd-045M	0.0	9.5	0.057	0.007		1.0	35.8			46.8		16.4
ŀ	*	LNWsd-046M	0.0	4.75	0.028	0.005	22.9			57.6		19.4		
L														



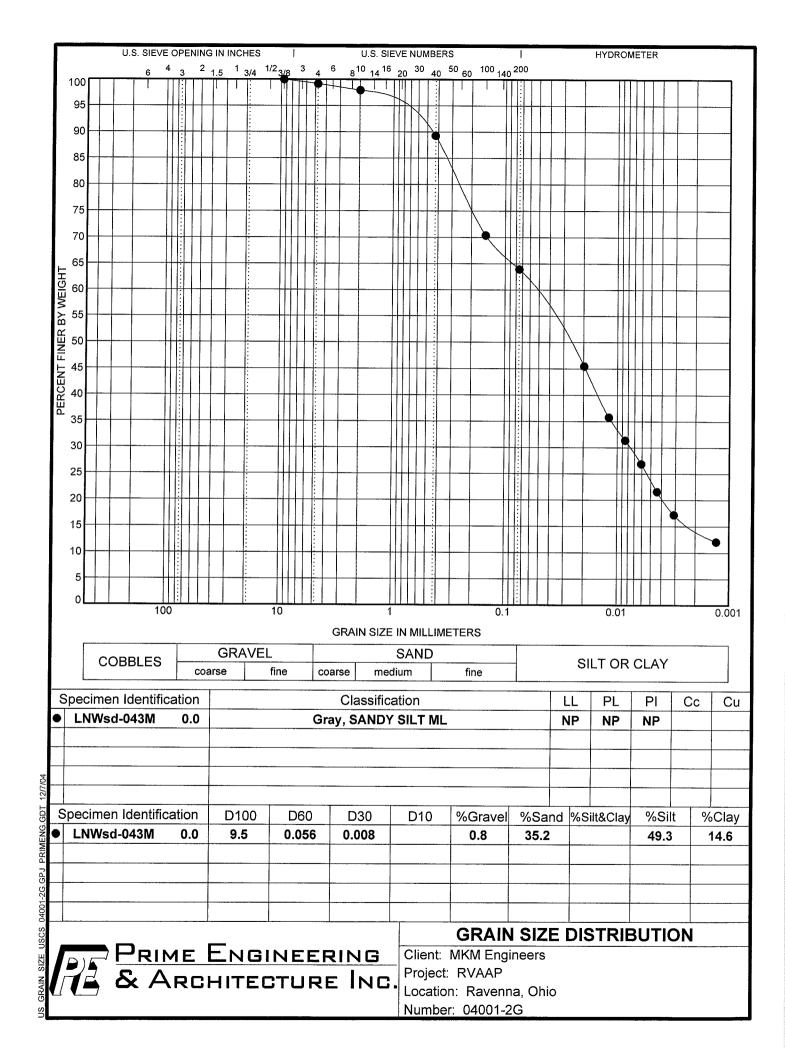
GRAIN SIZE DISTRIBUTION

Client: MKM Engineers

Project: RVAAP

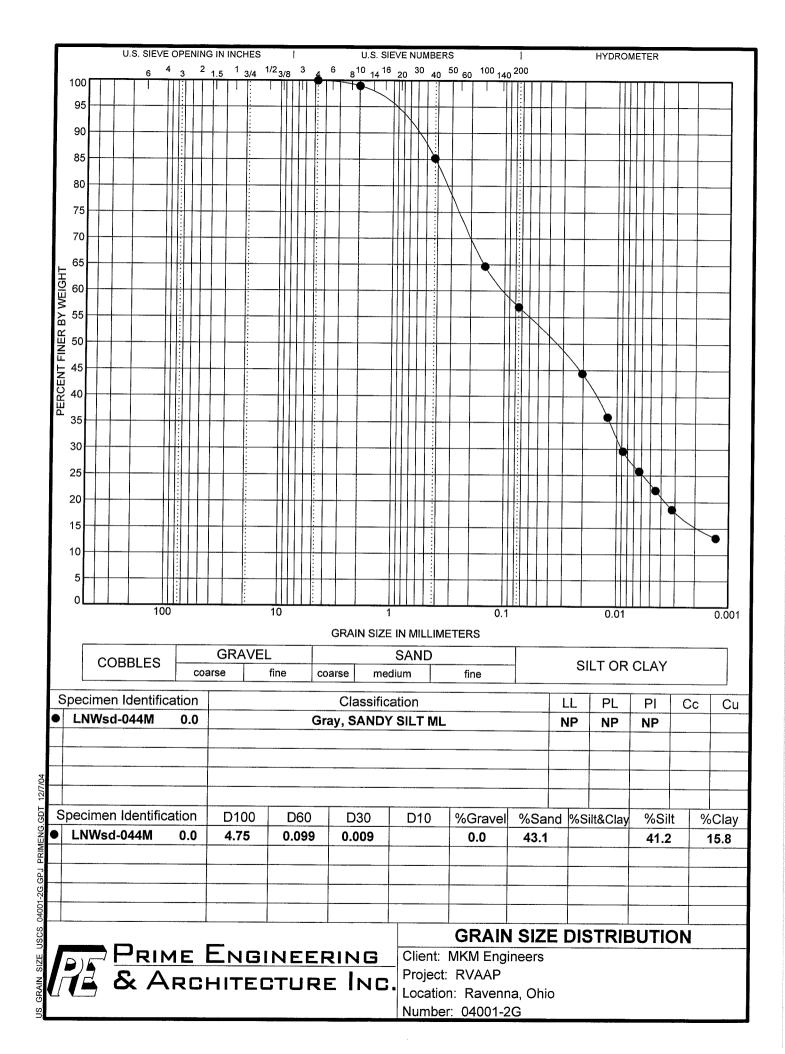
Location: Ravenna, Ohio Number: 04001-2G

Location ID: <u>LNW5d-0</u>	13M-	sd	Field	l Sampling I	Report			a Army Ammunition zation of 14 RVAAP	
Date: 03 Nov 04							Characteri	zation of 14 KVAA1	AOCS
·			Sar	npling Inform	ation	·			
Source	Grou	ndwater / Product		Surface Wa	ter /	Soil	Sedimen	ts / Sludge	
Method E	Bailer		Samı	ole Bottle		Scoop	X	Trowel	
P	ump		Baco	n Bomb		Bowl		Hand Auger	
						Push Probe		Bucket Limi) X
Type/Construction									<i>,</i>
	Vell Purg Tes - No	ing Form		N.					
Sample Collection: 105 hrs	Sample Type: Co	_58	Location: Lotted or Estimated		ed in Field ed - Surveyed				
Sample Depth: 0 6 FT (bel	low surfac	e) Decon: Dec	dicated -	- Each Day - Each	Location				
Field Parameters (at time of sample)		Ana		O	ther Para	meters			
PID / FID Readings:	ļ	VOC		TPH GRO		Corrosivity			
Background:	ppm	SVOC	X	TPH DRO		Reactivity Sulfide/Cy	ranide		
(), <u>(</u>	ノ	Explosives	X	Chromium +6		Ignitability			
Sample: O,O	ppm	Propellants		Nitrate					<u></u>
Water Level	/ FT	TAL Metals	X				QA Sam	ples	
Temperature	°C	Pesticides/PCBs				MS/MSD	Yes / No	N	ſΑ
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID		N/	١
pH	units	TOC	X			Equipment Rinse ID		N.A	Λ
Turbidity	N.T.U.	Grain Size	X			Trip Blank ID		N.A	1
Dh Gry SILT GE;	Sample	Description Sand 25% Sq	ture o	ted	Split Sample		Sample	11630	
No Plastic, ty No Sta	tring				Name:				
104R3/2					Agency/Com Address:	pany:			
				 					
					OA/OC Prov	ided: MS/MSD - Duplicate -	2:11	T. M.D. L.	
					Parameters:	Same as Above - As	Listed	Pield Blanks	
a	_				<u> </u>				
Soil sample description should include		Continue Division to 160							
Munsell Color Odor Staining Water sample description should incl				427					
r wer sample description snowld inci Color Odor Sheen Turbidity									
Logged By: Marb Donk	4	(Please Print)	and the second second	permitter for an extra contract of the contrac	Revie	wed by: FRIC,	EWS	(Please	Print)
Signature:	les -	(=10000 11111)				ature:	~	Date: 2/1/09	5



Location ID: LNNSd-6			Field	d Sampling R	leport			a Army Ammunition zation of 14 RVAAP			
Date: 62 Nov 0 Y											
		<u> </u>	Sar	mpling Informa	rtion						
Source	Grou	undwater / Product /		Surface Wat	er	Soil	s/Sedimen	ts /Sludge			
Method	Bailer		Samı	ple Bottle		Scoop	X	Trowel			
	Pump		Baco	n Bomb		Bowl		Hand Auger			
						Push Probe		Aastalines	ĺχ		
Type/Construction		/									
Miscellaneous	Well Purg Yes - No										
Sample Collection: 145 hrs		Sample Type: Con	mposite	(MI) Grab	de	Location: Plotted on	1 Map Stak	ed in Field			
Sample Depth: 0-0.5 FT (below surfac	Decon: Dec	II, # of i	increments taken: - Each Day - Each	Location	Estimated	l - Mea sur	ed - Surveyed			
Field Parameters (at time of sample)		Anal	ytical	Parameters		Oı	ther Para	meters			
PID / FID Readings:		VOC		TPH GRO		Corrosivity					
Background:	ppm	SVOC	X	TPH DRO		Reactivity Sulfide/Cy	anide				
		Explosives	1	Chromium +6		Ignitability					
Sample: O,(O ppm	Propellants	X	Nitrate							
Water Level	FT	TAL Metals	$ \chi $				QA Sam	ples			
Temperature	°C	Pesticides/PCBs	X			MS/MSD	Yes / No	N	NΑ		
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID		N.A	Α		
рН	units	TOC	χ			Equipment Rinse ID		N.A	A		
Turbidity	N.T.U.	Grain Size	(Trip Blank ID		NA	A		
Soil sample description should inc	Charning	No Plackcity	,			D:		Field Blanks			
Munsell Color Odor Stainir	ng Texture	Sorting Plasticity Mois	ture								
Water sample description should i	nclude:										
Color Odor Sheen Turbio	dity										
Logged By: Mork Dunlery	1 0	(Please Print)			Revie	wed by: FACE	ius	(Pleas	se Print)		
Signature:	links.	•			Sign	nature:	L	Date: 2/1/06	5		

 $\overline{}$



Location ID: LNW Sch-1	045N	1 -Scl_	Field	l Sampling I	Report	C		na Army Ammunitio ization of 14 RVAA)	
			Sa	mpling Inform	tion				
Source	Grou	ndwater / Product	1	Surface Wa	ter /	Soils /	Sedimer	Sludge	
Method	Bailer		Sam	ple Bottle		Scoop	X	Trowel	
	Pump		Bacc	on Bomb		Bowl		Hand Auger	
						Push Probe		Plastic Liner	
Type/Construction						Mattocks			
Miscellaneous	Well Purg	ing Form							
Sample Collection: 1415 hrs Sample Depth: 0 0.5 FT (b.		Sample Type: Co	f MI, # c	MI) - Grab of increments taken: - Each Day - Each		Location:	Plotted or Estimate	n Man Staked in Fie d - Measured - Su	ld) irveyed
Field Parameters (at time of sample)		Ana	lytical	Parameters		Oth	er Para	ameters	
PID / FID Readings:		VOC		TPH GRO		Corrosivity			
Background:	ppm	SVOC	乂	TPH DRO		Reactivity Sulfide/Cyar	ide		
0,0		Explosives	乂	Chromium +6		Ignitability			
Sample: O.O	ppm	Propellants		Nitrate					
Water Level	FT	TAL Metals	X			(A San	ıples	
Temperature	°C	Pesticides/PCBs				MS/MSD	Yes / No)	NA
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID	NUISO	d-045M-I	Nas
рН	units	TOC	Х			Equipment Rinse ID			NA
Turbidity	N.T.U.	Grain Size	X			Trip Blank ID]	NA
Dark grey, 5,1 Saturated. C no plasticity	E Sample Organi (C	Description 2070 W/Sand COder, no	l ä	aning	QA/QC Pro	John Jent	touth	EXPL-ED-E LISVING P NOT ING P	-) Yace

 $Soil\ sample\ description\ should\ include:$

Munsell Color Odor Staining Texture Sorting Plasticity Moisture

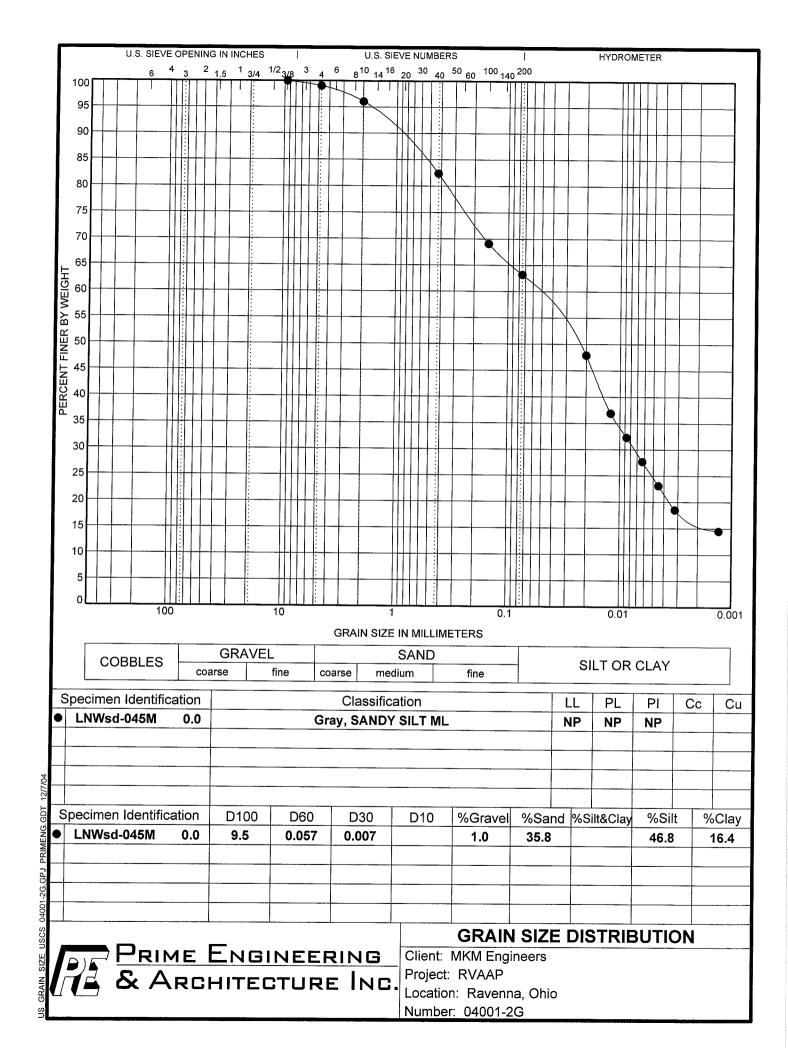
 $Water\ sample\ description\ should\ include:$

Color Odor Sheen Turbidity

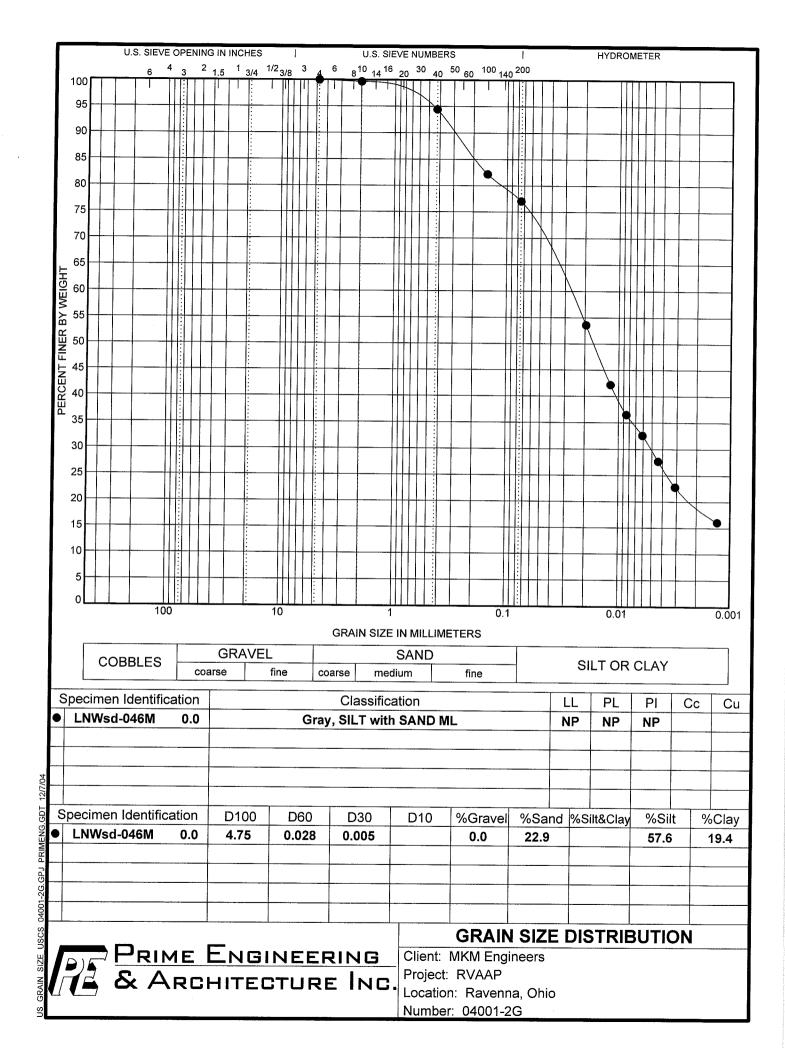
Logged By: James Manage (Please Print)
Signature: Makes Expression (Please Print)

Reviewed by: Sue Boles (Please Print)

Signature: Sue Boles Date: 09/23/0



Location ID: LNWS Date: M-2-04	d-0	46M-Sd	Field	d Sampling I	Report			na Army Ammuni ization of 14 RVA	
			Sa	mpling Inform	ation				
Source	Grou	indwater / Product	1	Surface Wa	ter /	Soil	s / Sedimer	nts// Sludge	
Method	Bailer		Sam	ple Bottle		Scoop	X	Trowel	
	Pump		Васс	on Bomb		Bowl		Hand Auger	
						Push Probe		Plastic Liner	X
Type/Construction		/		\mathcal{I}	A STATE OF THE STA	Mattocks			
Miscellaneous	Well Purg Yes - No	ing Form							
Sample Collection: 1053 hrs				e - MI - Grab	30	Location:	Plotted o	n Map Staked in I	Field
Sample Depth: <u>6-6"</u> FT (1	below surfac	ee) Decon: De	If MI, # c edicated	of increments taken: - Each Day - Kach			Estimate	ed - Measured -	Surveyeu
Field Parameters (at time of sample)		Ana	alytical	Parameters		Ot	ther Par	ameters	/
PID / FID Readings:		VOC		TPH GRO		Corrosivity			
Background:	ppm	SVOC	X	TPH DRO		Reactivity Sulfide/Cy	anide		
0.0		Explosives	X	Chromium +6		Ignitability			
Sample: O. O	ppm	Propellants		Nitrate					
Water Level	FT	TAL Metals	X				QA San	ıples	
Temperature	°C	Pesticides/PCBs	1			MS/MSD	Yes / N	2	NA
Sp. Conductance:	иMHOs	Cyanides				Duplicate ID		`	NA
рН	units	TOC	X			Equipment Ranse ID			NA
Turbidity	N.T.U.	Grain Size	X			Trip Blank ID			NA
NON plastic, s	rgani Sort		20%	0	Split Sample Name: Agency/Com Address:	e ID:	Sample		
Soil sample description should inc. Munsell Color Odor Stainin Water sample description should in Color Odor Sheen Turbia		Parameters:	vided: MSMSD - Duplicate - Same as Above - As			(Please Print)			
Signature:	3	(Please Print)	,					Date: 23/3/	05_



Sample Number	Depth (feet)	Moisture Content %		Plastic Limit %		Organic Content (%)		C Sand %	M Sand	F Sand %	Silt	Silt&Clay Comb.	Clay %	Soil Description	Class. Symbol
PIRsd-001M	0.0	34.7	NP	NP	NP	2.3	29.5	7.9	14.8	31.0	12.2	16.8	4.6	Dark brown SILTY SAND WITH GRAVEL	SM
PIRsd-002M	0.0	24.1	NP	NP	NP	1.6	25.9	12.3	23.6	31.2	4.4	6.9	2.5	Dark brown POORLY GRADED SAND WITH SILT AND GRAVEL	SP-SM



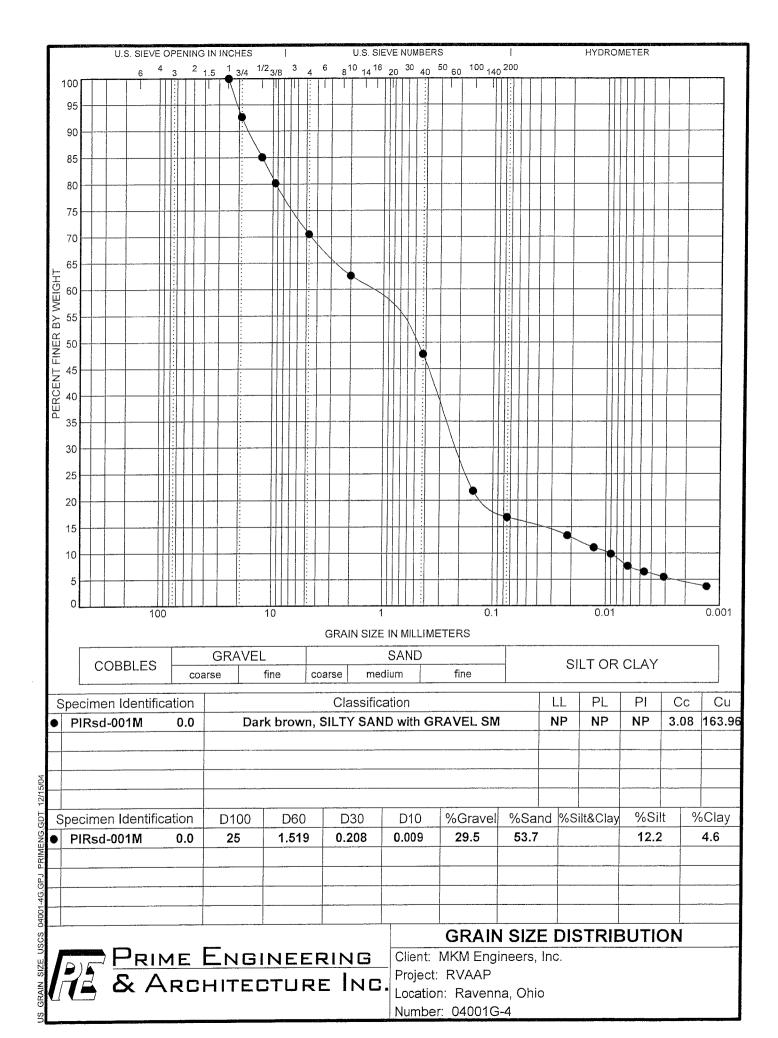
Summary of Laboratory Results Client: MKM Engineers, Inc.

Project: RVAAP

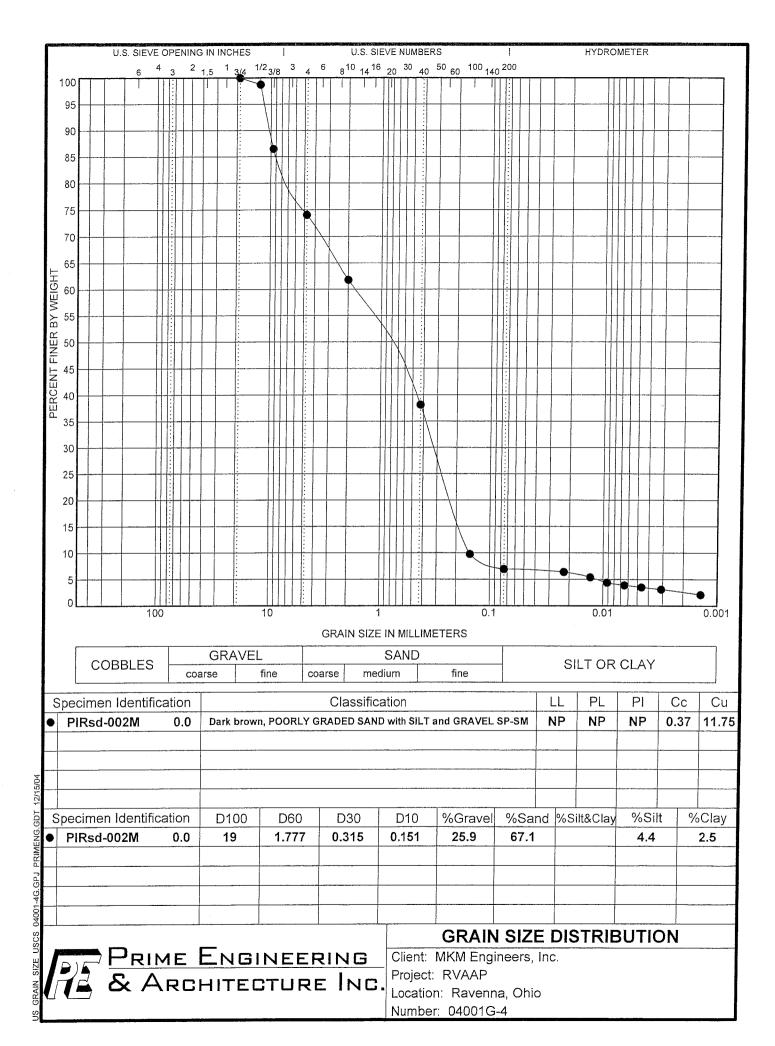
Location: Ravenna, Ohio

Number: 04001G-4

Location ID: PIR. Date: 17 Nov (5d-00, 94	"M-SD	Fiel	d Sampling I	Report			na Army Ammuni ization of 14 RVA	
	- · · ·		Sa	mpling Informa	ation		s nithor	,	
Source	Gro	andwater / Product		Surface Wa	ter	250	Is Sedimen	itsy Sludge	
Method	Bailer		Sam	ple Bottle		Scoop		Trowel	/
	Pump		Baco	ni Bomb		Bowl		Hand Auger	
						Push Probe		Plastic Liner	/
Type/Construction				1		Mattocks			
Miscellaneous	Well Purg Yes - No	ing Form							
Sample Collection: 1520 h		Sample Type: Co Ii ce) Decon: Dec	mposite f MI, # o dicated	MI Grab of increments taken: - Each Day Each	30 Location	Location	Estimate	Map Staked in F	Field Surveyed
Field Parameters (at time of sample)		Ana	lytical	Parameters		О	ther Para	meters	
PID / FID Readings:		VOC		TPH GRO		Corrosivity			
Background:	ppm	SVOC	1	TPH DRO		Reactivity Sulfide/Cy	/anide		
Ç	O(O)	Explosives	/	Chromium +6		Ignitability			
Sample: O	O ppm	Propellants	1	Nitrate					
Water Level	FT	TAL Metals					QA Sam	ples	
Temperature	°C	Pesticides/PCBs	/			MS/MSD	Yes / No		(NA)
Sp. Conductance:	uMHOs	Cyanides		_		Duplicate ID	PIRSO	L-001M-DUF) NA
рН	units	TOC	/			Equipment Rinse ID			NA)
Turbidity	N.T.U.	Grain Size	i/			Trip Blank ID		4	NA)
No Odor, No water in str No YR 3/3 2 2 Non Mamile Sand & gr	eam wets,	Postly so	Running	Name: Agency/Com Address: Goo T	ID: PIRSA-O John Jer pany: LISACE C MARTIN WITH YIME KY 40 ided: MS/MSD Duplicate Same as Above As	L L GW SVI FL WASE: SZESZ Trip Blanks:	ile Sr daza		
Soil sample description should in Munsell Color Odor Stains		Sorting Plasticity Moist	uro						
Vater sample description should		DOINING FUSICITY MOIST	и) С			12 A 12 A 17 A 17 A 17 A 17 A 17 A 17 A			
Color Odor Sheen Turbi				80 00 00 00 00 00 00 00 00 00 00 00 00 0		1			
ogged By: Zunhal	141	(Please Print)			Reviev	ved by: EKIL	EWS		Please Print)
ignature: Wighael	Same	lake				ature:	_	al. i	05



	Field Sampling Report Ravenna Army Ammunition Plant Characterization of 14 RVAAP AOCs Pate:											
Date. // social	<u> </u>		.	Sa	mpling Inform	ation						
Source	Gro	ındwater / Produ	ct		Surface Wa		Soi	ils /Sedimei	its/Sluc	dge		
Method B	Bailer		1	Sam	ple Bottle		Scoop	$\overline{}$	Trow		1,/	
P	ump			Bacc	n Bomb	\mathcal{M}^{\pm}	Bowl		Hand	Auger		
-			J				Push Probe		Plastic	c Liner		
Type/Construction							Mattocks		Teff	n Scoop	1	
Miscellaneous V											10	
Sample Collection: 1/020 hrs	Sample Collection: 1/020 hrs Sample Type: Composite - M- Grant # of increments to							Plotted or Estimate	Map d - Me	Staked in Field eastred Surv	eyed	
Sample Depth: 0-0.5 FT (below Field Parameters	ow surfac	Deco		Parameters	Each Location							
(at time of sample)				,		1			1			
PID'/ FID Readings:	ppm	VOC			TPH GRO		Corrosivity					
Background:	$\supset \mid$	SVOC			TPH DRO		Reactivity Sulfide/Cy	yanide			-	
, 0, "		Explosives		Market .	Chromium +6		Ignitability				-	
Sample: O.O	ppm	Propellants			Nitrate							
Water Level		TAL Metals		Land .				QA Sam	ples	(93)		
Temperature	°C	Pesticides/PCB	3				MS/MSD	Yes No		N	IA	
Sp. Conductance:	uMHOs	Cyanides]	£		Duplicate ID			NA	1	
Ηq	units	TOC		4			Equipment Rinse ID			NA		
Turbidity	N.T.U.	Grain Size					Trip-Blank ID			NA	1	
No Odar, No Stain Water sample description should include Water sample description should include	of		D:		Field Blai	nks t						
Color Odor Sheen Turbidity												
Logged By: <u>Wichael</u> Signature: <u>Welfall</u>	Please		Reviev Sign:	ved by: FUL	EUIS	Date	(Please	Print)				



Sample Number	Depth (feet)	Moisture Content		Plastic Limit %		Organic Content (%)		C Sand %	M Sand %	F Sand %	Silt %	Siit&Clay Comb.	Clay %	Soil Description	Class. Symbol
NTAmw-111	5.5	21.7	28	18	10		0.0	0.0	0.2	0.7		99.1		Mottled brown and gray LEAN CLAY (CL), trace sand	CL
NTAmw-112	11.5	10.7	19	16	3		5.5	4.5	10.0	23.5	-	56.6		Gray SANDY SILT (ML), trace gravel	ML
NTAmw-113	7.5	20.3	25	21	4		0.0	0.0	0.2	3.8		96.0		Brown SILTY CLAY (CL-ML), trace sand	CL-ML



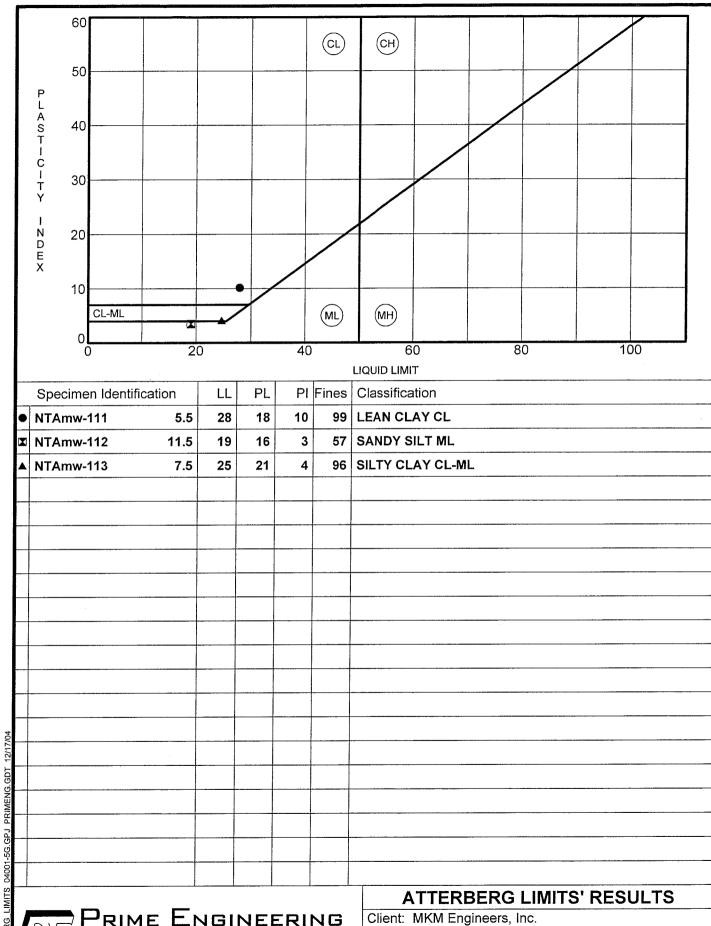
Summary of Laboratory Results

Client: MKM Engineers, Inc.

Project: RVAAP

Location: Ravenna, Ohio

Number: 04001G-5



PRIME ENGINEERING & ARCHITECTURE INC.

Project: RVAAP

Location: Ravenna, Ohio Number: 04001G-5

Prime Engineering & Architecture

Project No.: 04001G
Project: RVAAP
Client: MKM Engineers
Technician(s): Stephanie and Brandi
Date: 12/17/2004

Sample No:	pH Reading:	Specific Gravity:
NTAmw-111	8.4	2.753
NTAmw-112	8.4	2.715
NTAmw-113	8.2	2.763

Location ID: NTAm. Date: 12-03	N-111	(4-6f4)	Field	l Sampling F	Report			rmy Ammunition on of 14 RVAAP	
	·		Sa	mpling Informa	ation				
Source	Grou	ndwater / Produc	ct	Surface Wat	ter	Soil	Sediments /	Sludge	
Method	Bailer		Sam	ple Bottle		Scoop	Ti	rowel	
	Pump		Baco	on Bomb		Bowl	Н	and Auger	
						Push Probe	SI	helby Tube	~
Type/Construction									
Miscellaneous	Well Purg Yes - No	ing Form							
Sample Collection: 0945hr Sample Depth: 4-6 FT	s (below surfac		If MI, # (e - MI - Grab of increments taken: - Each Day - Each		Location	Plotted on Ma Estimated -	p Staked in Field Measured - Surv	l) veyed
Field Parameters (at time of sample)			Analytical	Parameters		О	ther Parame	eters	
PID / FID Readings:		VOC		TPH GRO		Corrosivity			
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	/anide		
		Explosives		Chromium +6		Ignitability			
Sample:	ppm	Propellants		Nitrate					
Water Level	FT	TAL Metals		Geotechnical	~		QA Sample	es	'
Temperature	°C	Pesticides/PCB	s s			MS/MSD	Yes / No	1	NA
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID		N.	A
рН	units	тос				Equipment Rinse ID		N.	A
Turbidity	N.T.U.	Grain Size				Trip Blank ID		N.	A
	Sampl	e Description			Address:	D:			
Soil sample description should in Munsell Color Odor Stain Water sample description should	ning Texture	Sorting Plastic	ity Moisture			vided: MS/MSD - Duplicate Same as Above - As		ld Blanks	

Reviewed by: SUC BOLES
Signature: Sull Boles

Date:

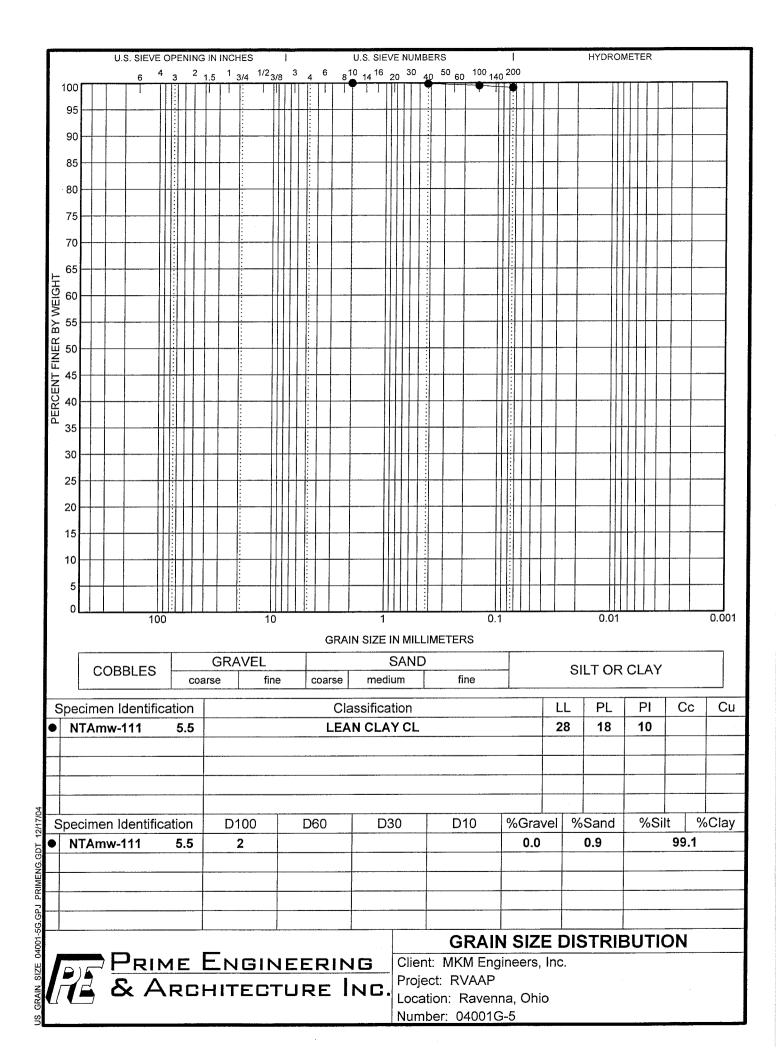
Signature:

Color Odor Sheen Turbidity

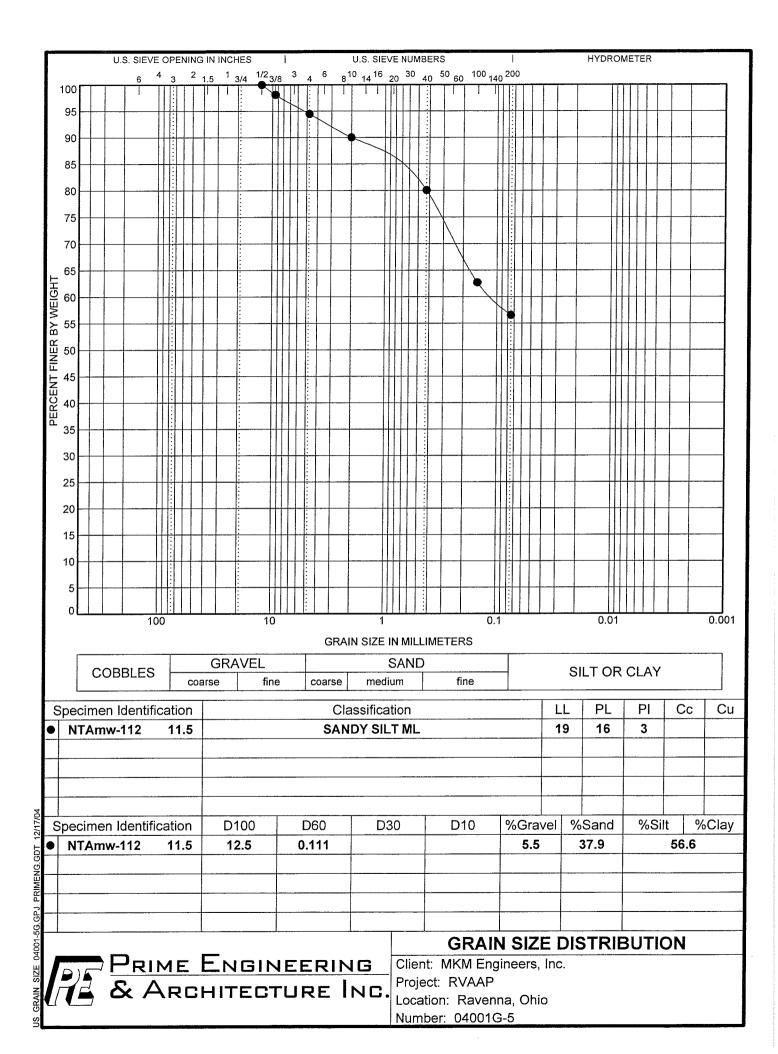
(Please Print)

Logged By: _

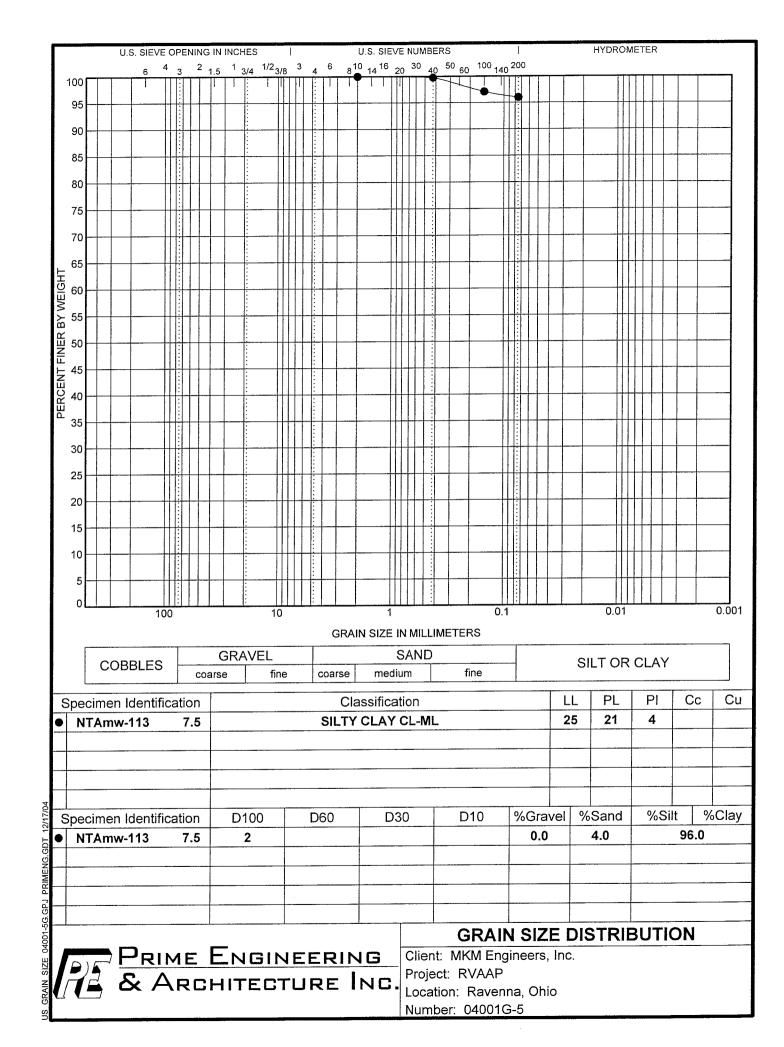
Signature:



Location ID: NTAme	N-112	(10-12H)	Field	Sampling R	deport				ammunition P	
			Sai	npling Informa	ition					
Source	Grou	ndwater / Product		Surface Wat	er	Soil	s) Sedimen	ts / Sludg	e	
Method	Bailer		Samj	ole Bottle		Scoop		Trowel		
	Pump		Baco	n Bomb		Bowl		Hand A	uger	
						Push Probe		Shelby	Tube	~
Type/Construction										
Miscellaneous	Well Purg Yes - No	ing Form								
Sample Collection: 1250 hrs	3			- MI - Grab		Location	Plotted on	Map Sta	aked in Field sured - Surve)
Sample Depth: 10-12 FT	(below surfac		,	of increments taken: - Each Day - Each	Location		Estimate	d - Meas	sured - Surve	yea
Field Parameters (at time of sample)		Ana	Parameters		О	ther Para	meters			
PID / FID Readings:		VOC		TPH GRO		Corrosivity				
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	anide			
		Explosives	i.	Chromium +6		Ignitability				
Sample:	ppm	Propellants		Nitrate						
Water Level	FT	TAL Metals		Geotechnical	~	1	QA Sam	ples		
Temperature	°C	Pesticides/PCBs				MS/MSD	Yes / No)	N	4
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID			NA	
рН	units	тос				Equipment Rinse ID			NA	
Turbidity	N.T.U.	Grain Size	V			Trip Blank ID	different des constitutes		NA	
Soil sample description should in Munsell Color Odor Stain Water sample description should	nclude:	Sorting Plasticity Mon			e ID:		- Field Blank	SS THE STATE OF TH		
Color Odor Sheen Turb										
Logged By: EPIC	eus	(Please Print)		Revie	ewed by: Site B	oles.		(Please	Print)
Signature:	h				Sig	nature: <u>Sui Bo</u>	les	Date	06/15	10s



Location ID: NTA mo	w-113	(6-8 f	+)	Field	Sampling R	eport					Ammunition F of 14 RVAAP A	
				Sar	npling Informa	tion						
Source	Grou	ndwater / Produc	:t		Surface Wat			Soil	s/Sedimen	ts / Sluc	lge	
Method	Bailer			Samp	ole Bottle			Scoop		Trowe	el	
	Pump			Baco	n Bomb			Bowl		Hand	Auger	
·								Push Probe		Shelb	y Tube	V
Type/Construction												
Miscellaneous	Well Purg Yes - No	ing Form										
Sample Collection: 08 52 hrs	3	Sample Ty			- MI - Grab			Location			Staked in Field	$\overline{\mathbf{S}}$
Sample Depth: 6-8 FT	(below surfac	e) Deco i			f increments taken: - Each Day - Each	Location	1	101.0	Estimate	ea - Ivie	easured - Surve	eyeu
Field Parameters (at time of sample)			Anal	Parameters			О	ther Para	ameter	·s		
PID / FID Readings:		TPH GRO			Corrosivity							
Background:	ppm	SVOC			TPH DRO			Reactivity Sulfide/Cy	/anide			
		Explosives			Chromium +6			Ignitability				
Sample:	ppm	Propellants			Nitrate							
Water Level	FT	TAL Metals			Geotechnical	\ \ \			QA Sam	ples		
Temperature	°C	Pesticides/PCB	s					MS/MSD	Yes / No)	N	A
Sp. Conductance:	uMHOs	Cyanides						Duplicate ID			NA	
рН	units	TOC						Equipment Rinse ID			NA	
Turbidity	N.T.U.	Grain Size		/		1		Trip Blank ID		CXXXXXXXX V+1A-	NA	
	Sampl	e Description				Name Agene Addre	cy/Con ess:		t Sample			
Soil sample description should include: Munsell Color Odor Staining Texture Sorting Plasticity Moisture Water sample description should include: Color Odor Sheen Turbidity								wided: MS/MSD - Duplicate : Same as Above - As		∓ Field Bl	anks	
Logged By: ERIC	EUS -1	(Pleas	se Print)					1 h.	Boles		06/5	e Print)
Signature:	<u> </u>	 					Sig	gnature: Austra		Da	ate://3/	



Sample Number		Moisture Content		Plastic Limit %		Organic Content (%)		C Sand %	M Sand %	F Sand %	Silt %	Silt&Clay Comb.	Clay %	Soil Description	Class. Symbol
LL5mw-001	7.6	20.6	39	25	14		1.1	0.5	1.9	8.4	,,,	88.1	,,,,	Brown LEAN CLAY, little sand, trace gravel	CL
LL5mw-003	9.6	22.0	NP	NP	NP		0.0	0.0	0.0	2.5		97.5		Brown SILT, trace sand	ML
LL5mw-006	11.6	17.9	29	21	8		0.7	2.6	2.0	8.1		86.5		Brown LEAN CLAY little sand trace gravel	CI



Project: Characterization of RVAAP 14 AOCs

Location: Ravenna, Ohio

Number: 04001G-6

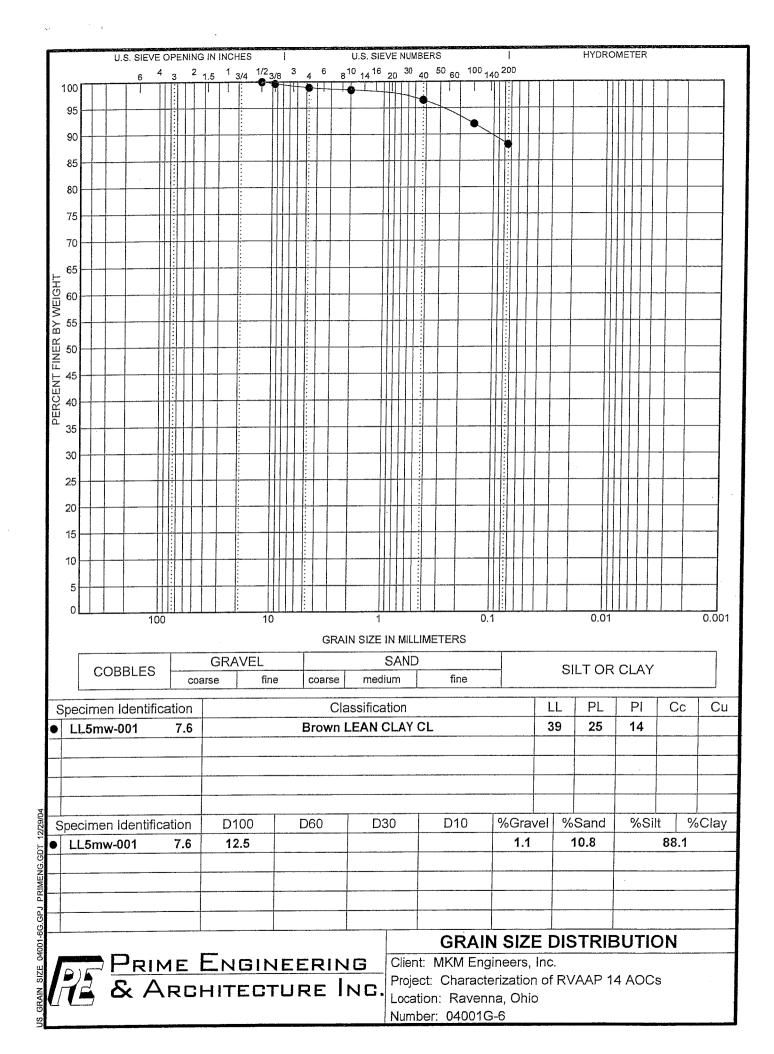
Location ID:	w-00 04	1 (6-8 ft) Fie	eld Sampling F	Report	t			a Army Ammunitio zation of 14 RVAA	
				Sampling Informa	ation					
Source	Grou	ndwater / Produ	et	Surface Wa	ter		6 01	s) Sedimen	its / Sludge	
Method	Bailer		Sa	ample Bottle			Scoop		Trowel	
	Pump		В	acon Bomb			Bowl		Hand Auger	
							Push Probe		Shelby Tube	V
Type/Construction										
Miscellaneous										
Sample Collection: 1240 hrs Sample Depth: 6-8 FT			If MI,	site - MI - Grab # of increments taken: ed - Each Day - Each	Location	1	Location	Plotted on Estimate	n Map-Staked in Fie d - Measured - Su	ld rveyed
Field Parameters (at time of sample)			Analytic	eal Parameters			О	ther Para	nmeters	
PID / FID Readings:		VOC		TPH GRO			Corrosivity			
Background:	ppm	SVOC		TPH DRO			Reactivity Sulfide/Cy	anide		-
		Explosives		Chromium +6			Ignitability			
Sample:	ppm	Propellants		Nitrate						
Water Level	FT	TAL Metals		Geotechnical	V	/		QA Sam	ples	
Temperature	°C	Pesticides/PCE	3s				MS/MSD	Yes / No)	NA
Sp. Conductance:	uMHOs	Cyanides					Duplicate ID			NA .
рН	units	TOC					Equipment Rinse ID			NA
Turbidity	N.T.U.	Grain Size	V				Trip Blank ID]	NA
Soil sample description should in Munsell Color Odor Stain Water sample description should	ning Texture	Sorting Plastic	city Moisture		Name Agend Addre	ess:	vided: MS/MSD - Duplicate Same as Above - As	- Trip Blanks - Listed	- Field Blanks	
Color Odor Sheen Turb	pidity					, - ,				
Logged By: EPIC F	=uuS	(Plea	se Print)			Revie	ewed by: Suc I	30/25	(P	lease Print)

Signature:

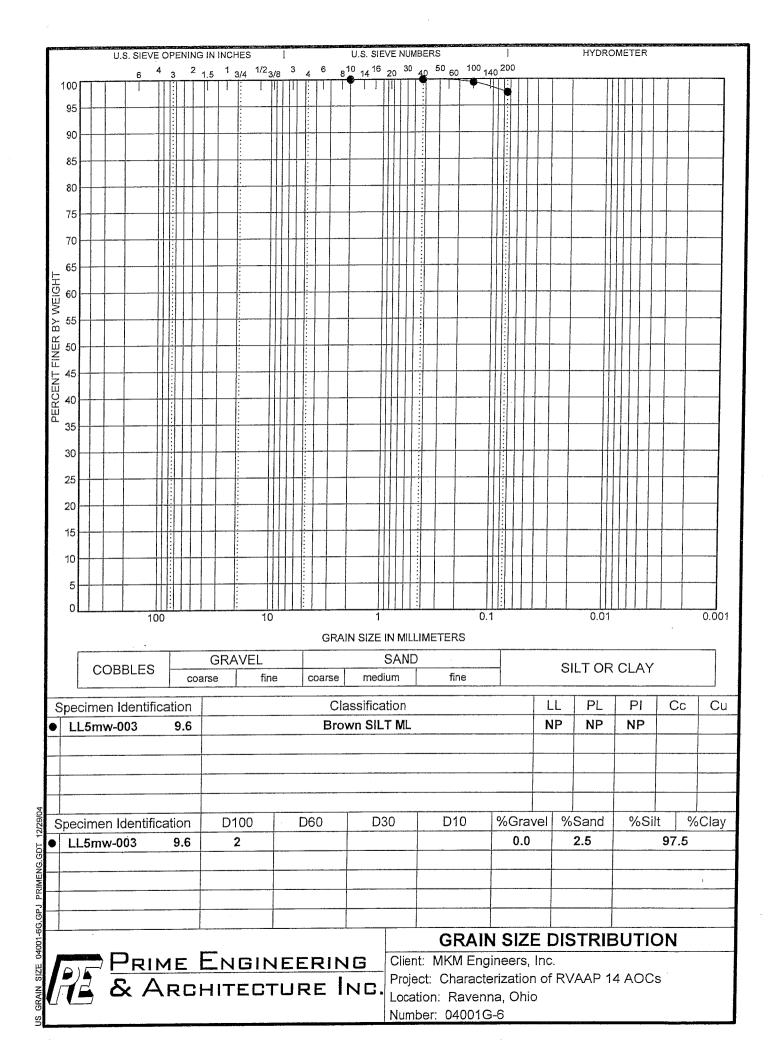
06/15/05

Date:

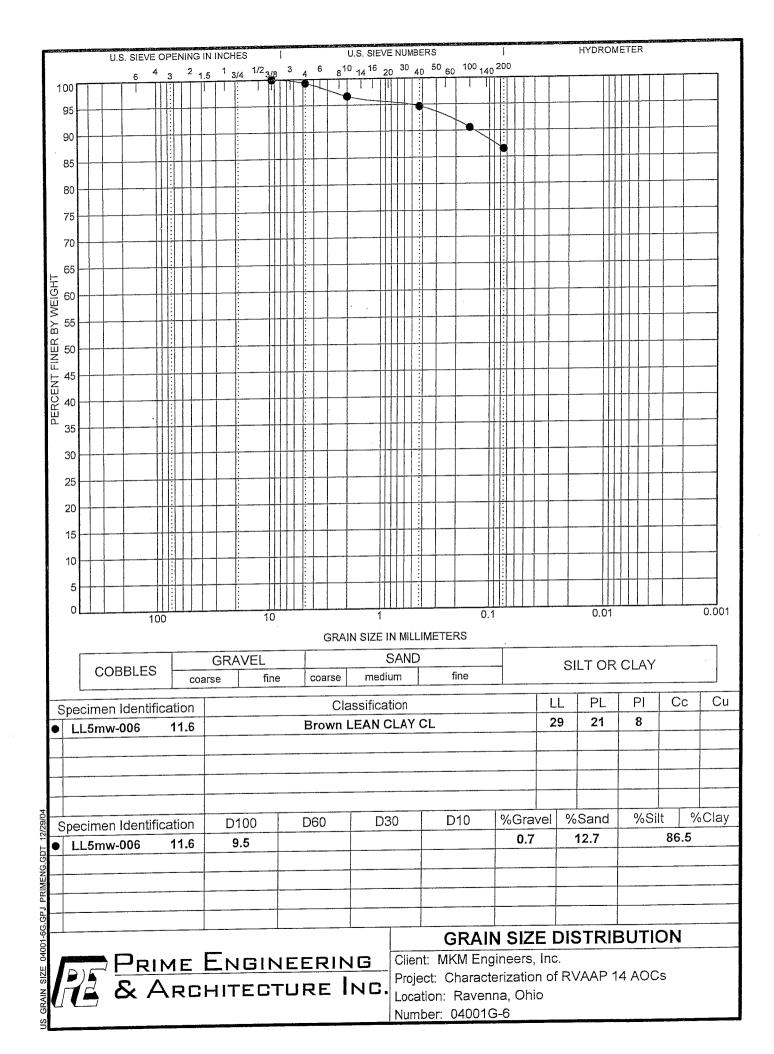
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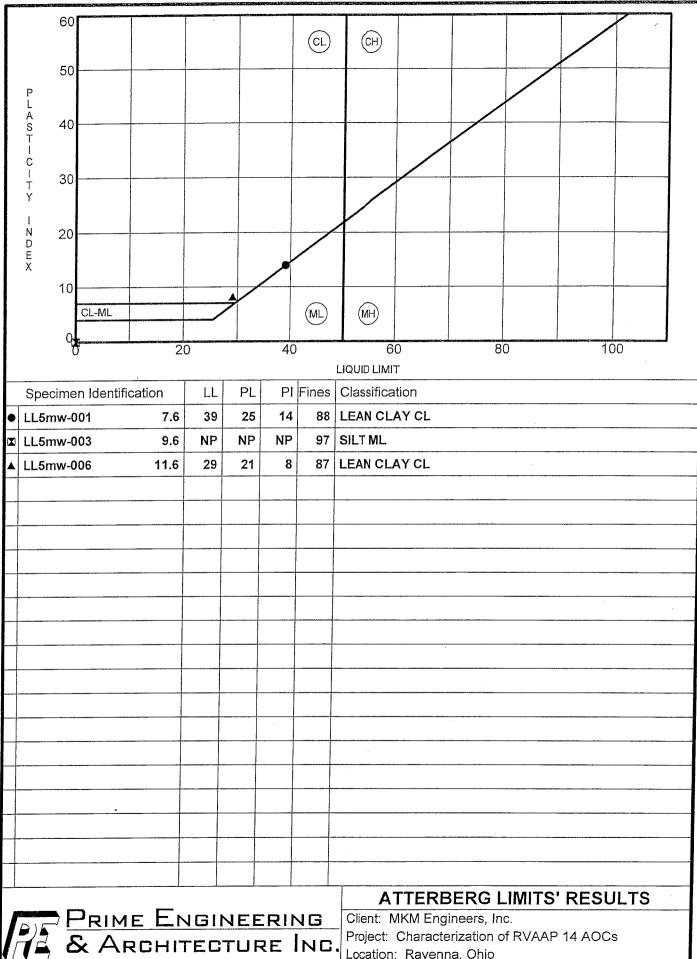


Field Sampling Report Ravenna Army Ammunition Plant Ravenna Army Ammunition Plant												
Location ID: LL5mw	-003	(8-10 ft)	1 IVA-	. Sambara	.cport			a Army Ami ization of 14				
Date: 12-09	-04											
			Sai	mpling Informa	tion							
Source	Grou	ndwater / Product		Surface Wat	er	Coi	Sedimen	its / Sludge				
Method	Bailer		Sam	ple Bottle		Scoop		Trowel				
	Pump		Baco	on Bomb		Bowl		Hand Auge	ır			
						Push Probe		Shelby Tub	ie	~		
Type/Construction												
Miscellaneous	Well Purg Yes - No	ing Form										
Sample Collection: 1050 hrs	3	Sample Type: C			SHEET PRINCE IN NOTICE OF	Location		n Map & Stake		$\overline{>}$		
Sample Depth: 8-10 FT	(below surfac	e) Decon: De		of increments taken: - Each Day - Each	Location		Estimate	d - Méasure	d - Surve	yed		
Field Parameters (at time of sample)		Ana	ılytical	Parameters		O	ther Para	ameters				
PID / FID Readings:		VOC		TPH GRO		Corrosivity						
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	yanide					
		Explosives		Chromium +6		Ignitability						
Sample:	ppm	Propellants		Nitrate								
Water Level	FT	TAL Metals		Geotechnical	~		QA Sam	ples				
Temperature	°C	Pesticides/PCBs				MS/MSD	Yes / No)	N.	A		
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID			NA	·		
рН	units	TOC				Equipment Rinse ID			NA			
Turbidity	N.T.U.	Grain Size				Trip Blank ID			NA			
	Sample	e Description			Split Samp Name: Agency/Co Address:	ole ID:	t Sample					
Soil sample description should in Munsell Color Odor Stain. Water sample description should Color Odor Sheen Turb.	ing Texture	Sorting Plasticity Mo		Parameter	ovided: MS/MSD - Duplicate s: Same as Above - A:		- Field Blanks					
Logged By: EXIC	EWS	(Please Print	t)	And the state of t	Re	riewed by: Sue	Boles		(Plcase	Print)		
Signature: 565	L_				S	ignature: Jue Bo	les	Date:	2/15/0	15		



Location ID: LL5		06 (10-12 ft)	Field	l Sampling R	eport			a Army Ammunition zation of 14 RVAAP	3
			Sai	mpling Informa	tion				
Source	Grou	ndwater / Product		Surface Wat	er	Soil	s / Sedimen	its / Sludge	
Method	Bailer		Samj	ole Bottle		Scoop		Trowel	
	Pump		Baco	n Bomb		Bowl		Hand Auger	
						Push Probe		Shelby Tube	V
Type/Construction							L		
Miscellaneous	Well Purg Yes - No	ing Form							
Sample Collection: 0945 hr	5	Sample Type:	- MI - Grab		Location		Map Staked in Field d - Measured - Surv		
Sample Depth: 10-12 FT	(below surfac	e) Decon: 1		of increments taken: - Each Day - Each	Location		Estimate	d - Measured - Surv	reyea
Field Parameters (at time of sample)		Aı	nalytical	Parameters		О	ther Para	nmeters	
PID / FID Readings:		VOC		TPH GRO		Corrosivity			
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	anide		
		Explosives		Chromium +6		Ignitability			
Sample:	ppm	Propellants		Nitrate					
Water Level	FT	TAL Metals	Geotechnical				QA Sam	ıples	
Temperature	°C	Pesticides/PCBs				MS/MSD	Yes / No) 1	NΑ
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID		N.	A
pH	units	тос				Equipment Rinse ID		N.	A
Turbidity	N.T.U.	Grain Size	/			Trip Blank ID		N	A
Soil sample description should in Munsell Color Odor Stain Water sample description should Color Odor Sheen Turb	nclude: ning Texture	Sorting Plasticity M		Address: QA/QC Prov			- Field Blanks		
Logged By: EAC F Signature: 545	JL VL	(Please Pri	nt)			ewed by: Sole I	301es olis	, (Plea 06/15 Date:	se Print)





Location: Ravenna, Ohio Number: 04001G-6

Prime Engineering & Architecture

10

Project No.: 04001G Project: RVAAP

Client: MKM Engineers

Technician(s): Stephanie and Brandi

Date: 12/22/2004

Sample No:	pH Reading:	Specific Gravity:
LL5mw-001	8.5	2.782
LL5mw-003	8.4	2.732
LL5mw-006	8.8	2.788

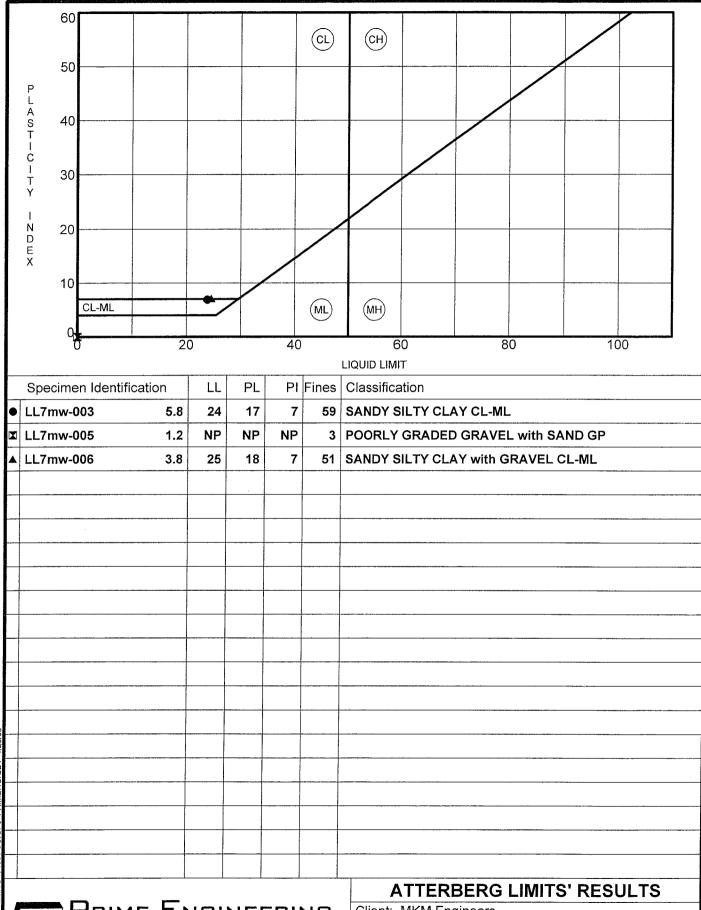
Sample Number		Moisture Content %		Plastic Limit %		Organic Content (%)		C Sand %	M Sand	F Sand %	Silt %	Silt&Clay Comb.	Clay %	Soil Description	Class. Symbol
LL7mw-003	5.8	12.8	24	17	7		1.7	2.8	9.3	25.1	70_	59.3	/0	Brown SANDY SILTY CLAY, trace gravel	CL-ML
LL7mw-005	1.2	9.7	NP	NP	NP		64.8	2.4	15.5	14.0		3.3		Brown POORLY GRADED GRAVEL WITH SAND, trace fines	
LL7mw-006	3.8	13.9	25	18	7		15.9	2.4	8.3	22.3		51.2		Brown SANDY SILTY CLAY WITH GRAVE	CL-MI



Project: RVAAP

Location: Ravenna, Ohio

Number: 04001G





Client: MKM Engineers

Project: RVAAP

Location: Ravenna, Ohio

Number: 04001G

Location ID: N		3 (4-6 ft)	Field	l Sampling F	eport		acana an			nunition Plant RVAAP AOCs
			Sar	npling Informa	tion					
Source	Grou	ndwater / Product		Surface Wat	er		Soi	s / Sedimen	ts / Sludge	
Method	Bailer	·	Samp	ole Bottle			Scoop		Trowel	
	Pump		Baco	n Bomb			Bowl		Hand Auger	r
							Push Probe		Shelby Tube	· 1
Type/Construction										
Miscellaneous	Well Purg Yes - No	ing Form								
Sample Collection: 1100 Sample Depth: 4-6			If MI, # o	- MI - Grab f increments taken: - Each Day - Each	Location		Location	Plotted on Estimated	Map Staked d - Measured	l in Field d - Surveyed
Field Parameters (at time of sample)		A	Analytical	Parameters			О	ther Para	meters	
PID / FID Readings:		VOC		TPH GRO			Corrosivity			
Background:	ppm	SVOC		TPH DRO			Reactivity Sulfide/Cy	yanide		
		Explosives		Chromium +6			Ignitability			
Sample:	ppm	Propellants		Nitrate						
Water Level	FT	TAL Metals		Geotechnical	V	-		QA Sam	ples	
Temperature	°C	Pesticides/PCBs					MS/MSD	Yes / No		NA
Sp. Conductance:	uMHOs	Cyanides					Duplicate ID			NA
рН	units	тос					Equipment Rinse ID			NA
Turbidity	N.T.U.	Grain Size	V				Trip Blank ID	<u> </u>		NA
	Sampl	e Description			Addre	: y/Con ss: C Pro	· ID:			
Soil sample description should	l include:									
Munsell Color Odor Sto	aining Texture	Sorting Plasticity	Moisture							

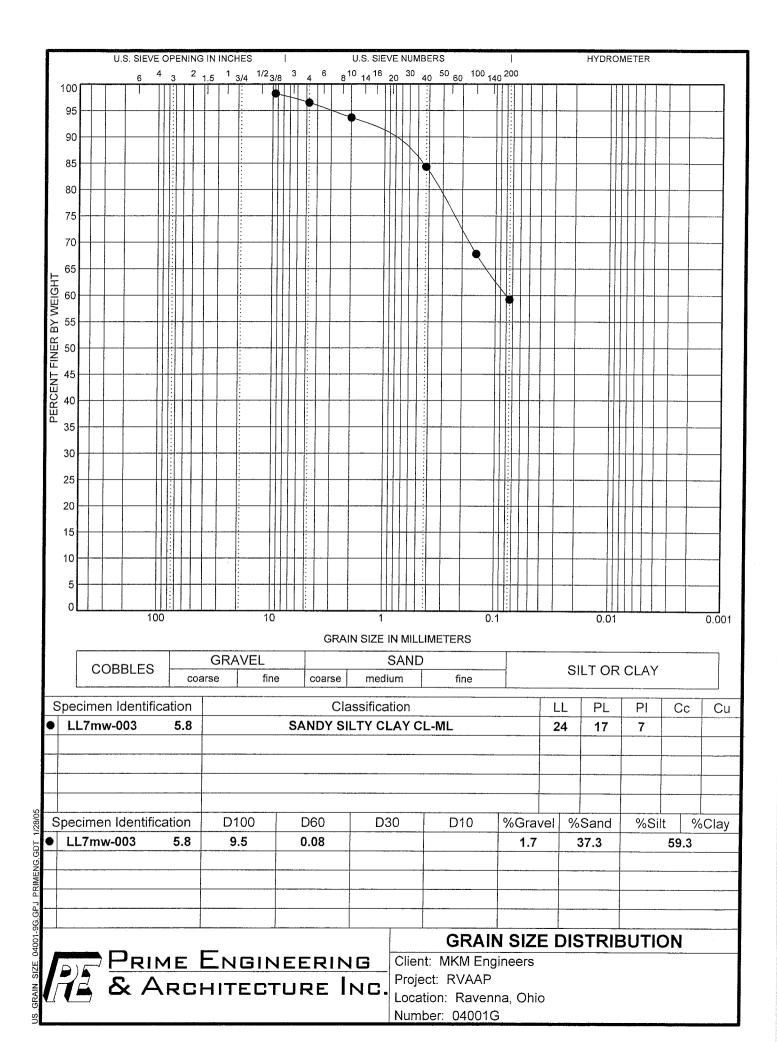
Logged By: Fuc sus (Please Print)

Reviewed by: Sue Boles (Please Print)

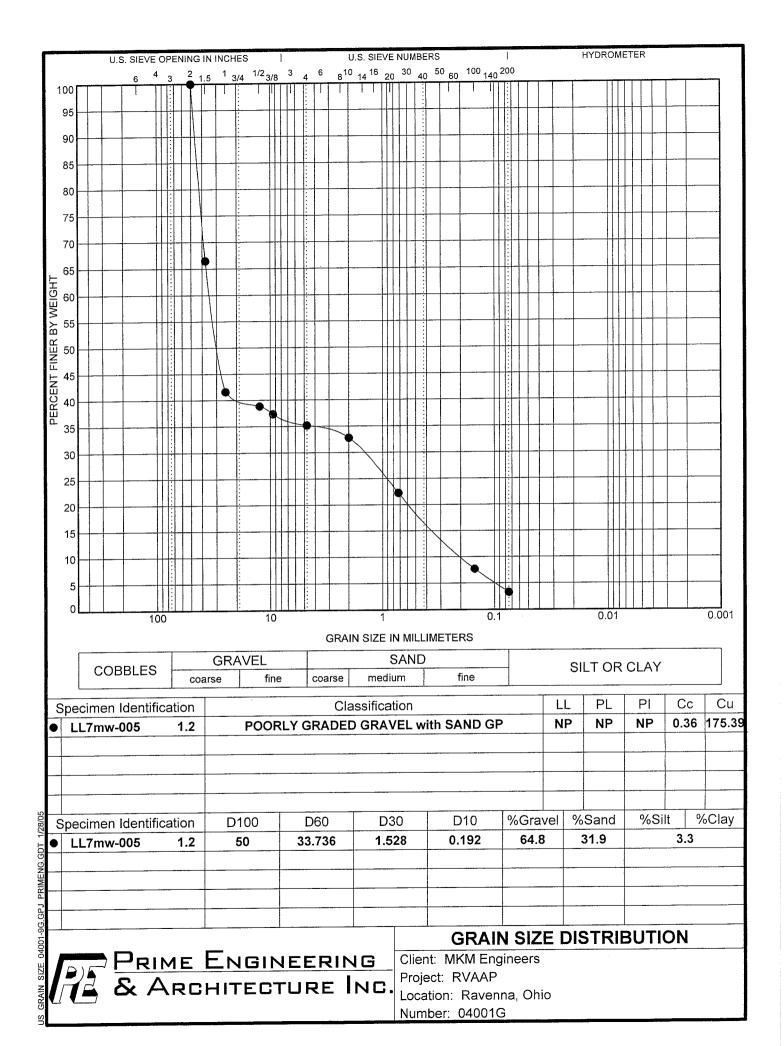
Signature: Signature: Signature: Date: Ob/15/05

Water sample description should include:

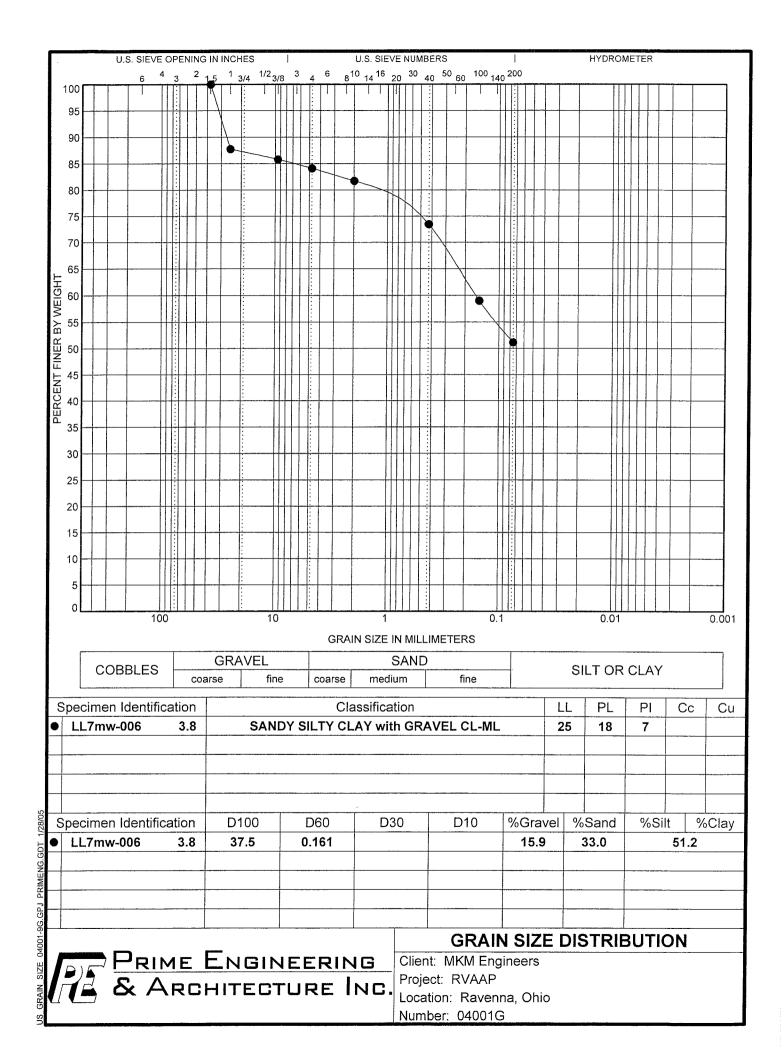
Color Odor Sheen Turbidity



Location ID: LL7 mw		(0-24)	Field	l Sampling R	eport				nmunition P RVAAP A	
			Sar	npling Informa	tion					
Source	Grou	ndwater / Product		Surface Wat	ter Soils Sediments / Sludge					
Method	Bailer		Samp	ole Bottle		Scoop		Trowel		
	Pump		Baco	n Bomb		Bowl		Hand Au	ger	
						Push Probe		Shelby Tu	ıbe	1
Type/Construction								<u> </u>		
Miscellaneous	Well Purg Yes - No	ing Form					and the second			
Sample Collection: 1420 hrs	3	Sample Type: (Composite	- MI - Grab	, <u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	Locations	Plotted on	Map	ed in Field	\leq
Sample Depth: 0-2 FT	(below surfac			of increments taken: - Each Day - Each	Location		Estimate	a - Measu	red - Surve	eyeu
Field Parameters (at time of sample)		An	Parameters		Ot	ther Para	meters			
PID / FID Readings:		VOC		TPH GRO		Corrosivity				
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	anide			
		Explosives		Chromium +6		Ignitability				
Sample:	ppm	Propellants		Nitrate						
Water Level	FT	TAL Metals		Geotechnical			ples			
Temperature	°C .	Pesticides/PCBs				MS/MSD	Yes / No)	N.	A
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID			NA	
рН	units	TOC				Equipment Rinse ID			NA	
Turbidity	N.T.U.	Grain Size	'			Trip Blank ID			NA	.
	Sampl	e Description				e ID:		- Field Blanks		
Soil sample description should in Munsell Color Odor Stain		Sorting Planticity M					2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			
Water sample description should		Soring Tusheny M							100 100 100 100 100 100 100 100 100 100	
Color Odor Sheen Turb										
Logged By:	FWS	(Please Prin	nt)	The Continues of the state of t	Revi	ewed by: SUP	Boles			e Print)
Signature:	L				Sig	gnature: Suc	Bole.	Date:	06/15	705-



	Location ID: LL7mw-006 (2-4 ft) Field Sampling Report Ravenna Army Ammunition Plant Characterization of 14 RVAAP AOCs Date: 1-12-05												
Date:			Sor	mpling Informa	tion								
Source	Cron	ndwater / Product	Sai	Surface Wat		Soil	Sedimen	ıts / Sludge					
Method	Bailer	diwater / 1 router	Samt	ole Bottle		Scoop		Trowel					
Method	Pump		-	n Bomb		Bowl		Hand Auger					
			-			Push Probe		Shelby Tube					
Type/Construction						7 5011 11000							
Miscellaneous	Well Purgi	ing Form											
Sample Collection: 0845 Sample Depth: 2-4 F			If MI, # c	- MI - Grab of increments taken: - Each Day - Each	Location	Location	Plotted or Estimate	n Map Staked in Fie d - Measured - Su	ld rveyed				
Field Parameters (at time of sample)		Ana	alytical	Parameters		O	ther Para	ameters					
PID / FID Readings:		VOC		TPH GRO		Corrosivity			ì				
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	anide						
		Explosives		Chromium +6		Ignitability							
Sample:	ppm	Propellants		Nitrate									
Water Level	FT	TAL Metals		Geotechnical	-	11111	QA San	aples					
Temperature	°C	Pesticides/PCBs				MS/MSD	Yes / No	0	NA				
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID NA			NA				
рН	units	тос				Equipment Rinse ID]	NA				
Turbidity	N.T.U.	Grain Size	V			Trip Blank ID			NA				
Soil sample description should Munsell Color Odor Sta Water sample description shou	include:	Sorting Plasticity Me			e ID;		Field Blanks						
Color Odor Sheen Tu	rbidity												
Logged By: FRC	EUS	(Please Prin	t)		Revi	ewed by: Sue	, Bole		lease Print)				
Signature:	zlh_				Sig	gnature: <u>Suck</u>	Dollar	Date:	105				



Prime Engineering & Architecture

Project No.: 04001G
Project: RVAAP
Client: MKM Engineers
Technician(s): Brandi & Eric

Date: 1/27/2005

Sample No:	pH Reading:	Specific Gravity:
LL7mw-003	7.8	2.742
LL7mw-005	8.6	2.716
LL7mw-006	7.7	2.729

Sample Number	Depth (feet)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plast. Index	Organic Content (%)		C Sand		F Sand		Silt&Clay Comb.	Clay	Soil Description	Class.
ASYsd-024M	0.0	228.4	NP	NP	NP	9.3	 0.0	0.5	4.8	%	%				Symbo
B12sd-023M	0.0	116.7				6.8	1.7	2.1					25.4	City Oil I, little Sailu	ML
B12sd-024M	0.0	189.1	NP	NP	NP	11.7			3.3	-	 		31.9	I SAND, (race drave)	CL
CBLsd-001M	0.0	45.2	NP	NP	NP		0.7	9.5	4.4				23.7	Lace diavel	ML
CBLsd-002M	0.0	34.9	NP			3.3	6.4	5.8			-	+	16.9	race graver	ML
CBLsd-003M	0.0			NP	NP	3.5	1.7	2.1	5.2	17.3	56.0	73.7	17.7	Brown SILT WITH SAND, trace gravel	ML
L12MW-242		62.2	NP	NP	NP	4	4.2	2.1	3.9	10.3	56.4	79.5	23.2	Brown SILT WITH SAND, trace gravel	ML
	9.5	19.1	NP	NP	NP		0.0	0.0	0.2	0.5		99.3		Gray SILT, trace sand	ML
L12MW-242	13.5	27.5	NP	NP	NP		0.0	0.0	0.0	0.0		100.0		Gray SILT	
L12MW-244	7.5	17.1	33	22	11		0.3	1.9	4.9	12.8		80.1		Brown LEAN CLAY WITH SAND, trace gravel	ML
LL7sd-012M	0.0	36.8	NP	NP	NP	5.9	12.6	16.2	20.6	18.4	25.4	32.2	6.8		CL
LL7sd-029M	0.0	317.2	NP	NP	NP	39.8	2.1						8.2	Brown SILTY SAND, little gravel	SM
LL8sd-001M	0.0	274.4	NP	NP	NP	26.1	0.6	5.2					17.9	Dark brown SANDY SILT, trace gravel	ML
LL8sd-002M	0.0	281.4	NP	NP	NP	20.8	3.4					-		Dark brown SILT WITH SAND, trace gravel	ML
LL8sd-003M	0.0	140.8	NP	NP				7.9					20.7	Gray SANDY SILT, trace gravel	ML
LL8sd-006M	0.0	60.9	NP		NP	11.1	0.4	3.4				1	19.3	oral oral old lace diavel	ML
	0.0	00.9	INP	NP.	NP	5.8	4.4	4.2	11.1	24.4	37.1	56.0	18.9	Gray SANDY SILT, trace gravel	ML

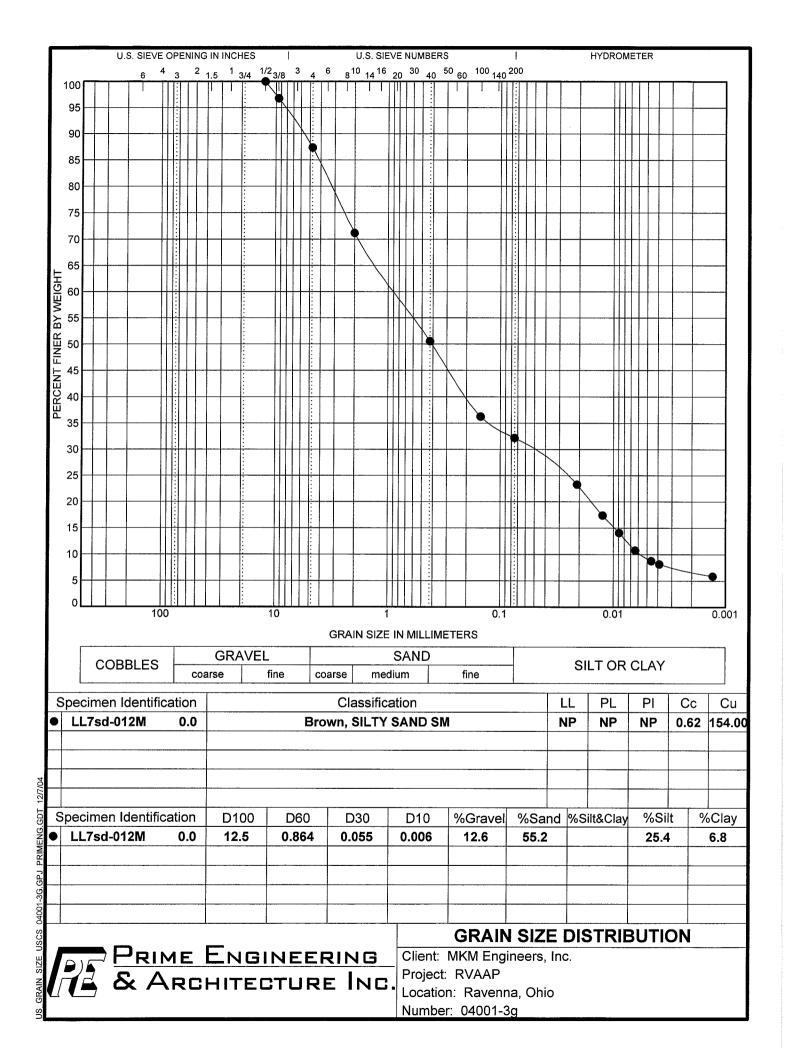


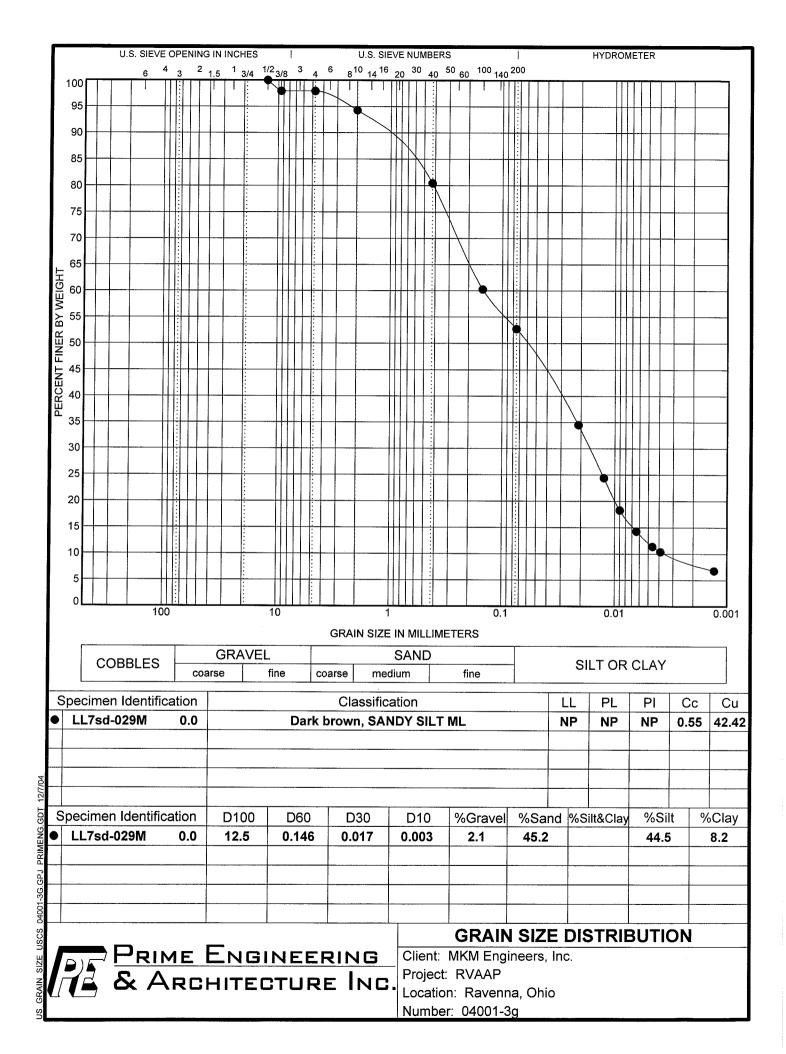
Project: RVAAP

Location: Ravenna, Ohio

Number: 04001-3g

Location ID:	d-012	M-5D	Field	d Sampling I	Report			na Army Ammuniti ization of 14 RVAA	
Date:	<u>v 0</u> 2			_		,			
			Sa	mpling Inform	ation				
Source	Gro	undwater / Product		Surface Wa	ter	Soi	ils/Sedimer	nts / Sludge	
Method	Bailer		Sam	ple Bottle		Scoop		Trowel	V
	Pump		Baco	on Bomb		Bowl		Hand Auger	,
						Push Probe		Plastic Liner	1
Type/Construction	/					Mattocks			
Miscellaneous	Well Purg	ing Form	7						
Sample Collection: 1840 hr		Sample Type: C	e - MD - Grab of increments taken:	30	Location	Plotted or Estimate	n Map - Staked in Fig ad - Measured - Si	eld urveyed	
Sample Depth: <u>O-0.5</u> FT Field Parameters	(below surfac			- Each Day - Each Parameters	Location	0	ther Para	ameters	
(at time of sample)		All	ııy tıcar	Tarameters	T			1 1	
PID / FID Readings:	ppm	VOC	-	TPH GRO		Corrosivity			
Background:		SVOC		TPH DRO		Reactivity Sulfide/C	yanide		
· · · · · · · · · · · · · · · · · · ·	. 0	Explosives	1	Chromium +6		Ignitability			
Sample: O.	O ppm	Propellants	1	Nitrate					
Water Level	FT	TAL Metals	/				QA Sam	ples	
Temperature	°C	Pesticides/PCBs				MS/MSD	Yes / No)	(NA)
Sp. Conductance:	uMHOs	Cyanides		7		Duplicate ID	EL75d-	OIZM-DUP	NA
pH	units	TOC	W	,		Equipment Rinse ID			NA)
Turbidity	N.T.U.	Grain Size	V			Trip Blank ID			ÑA)
Dooder, No	Sample Stalu	Description Collect	ted :	Crow	Split Sample	Split : ID: Lレフェナー。	Sample 9/2M-	SD	
Samp outside	doorwa	y of Bldg/	B-L		Name:	John Je	م) ک نی	cuar-ex-ey	
124R 2/2	2 1 V	morsty po	68 h	Sortel	Agency/Con Address:	IDANY: USAC:	= <u>- 400.</u> W VI.V	15.11; lte	
- monthy c	9 \$	1 601	Sa	~d 35/		MOVILLE, FY 40	1212-1-1212-1-1212-1-1212-1-1212	32 POTA	
cen 5	1	- 1 r		7 7 "	OA/OC Prov	vided: MS/MSD Diplicate	- Trip Blanks	Field Blanks	
0 1	J	• .			Parameters:	Same as Above - As	Listed	1	
Soil sample description should in	clude:								
Munsell Color Odor Staini		Sorting Plasticity Moi.	sture						
Water sample description should									
Color Odor Sheen Turbi									
Logged By: Michael 5	amelat	(Please Print)		1	Revie	wed by: FUC	eus		lease Print)
Signature: Michael	068	L	•			nature: 402	<i></i>	Date: 2/4/2	75





Sample Number	Depth (feet)	Moisture Content %	Liquid Limit %	Plastic Limit %		Organic Content (%)		C Sand %	M Sand	F Sand %	Silt	Silt&Clay Comb.	Clay %	Soil Description	Class. Symbol
LL8mw-001	11.6	17.3	26	20	6		35.3	16.5	10.8	17.1		20.3		Brown SILTY CLAYEY SAND WITH GRAVEL	SC-SM
LL8mw-006	9.6	13.0	22	17	5		19.9	20.5	13.3	29.3		17.1		Brown SILTY CLAYEY SAND WITH GRAVEL	SC-SM

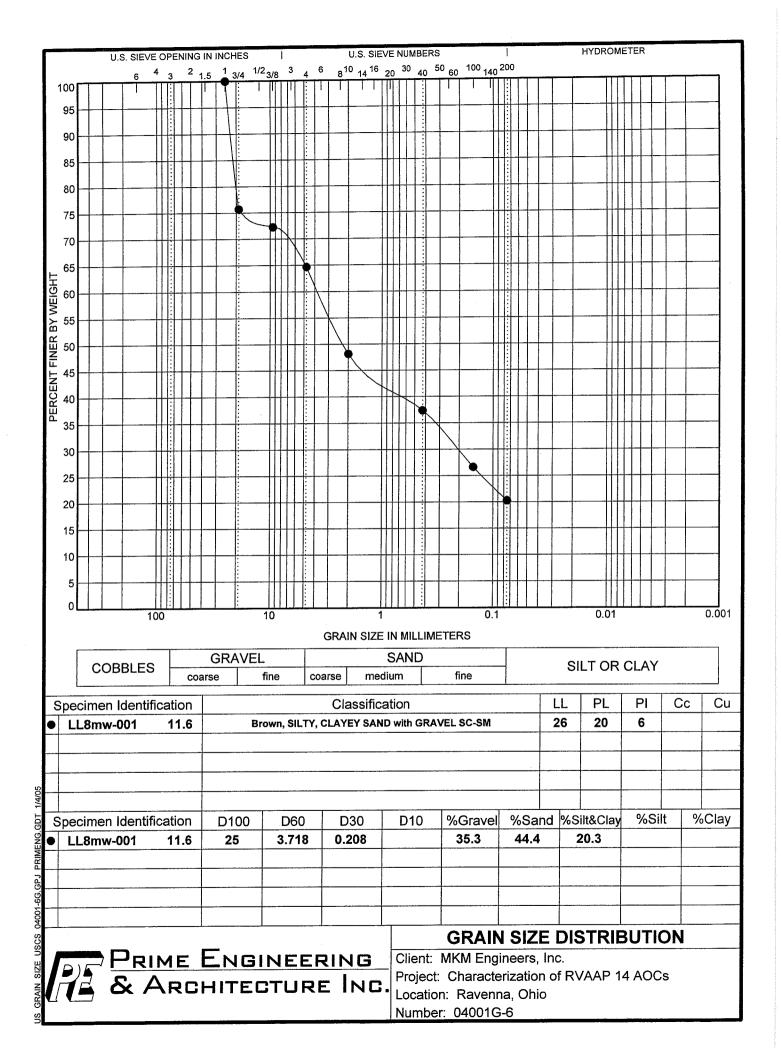


Project: Characterization of RVAAP 14 AOCs

Location: Ravenna, Ohio

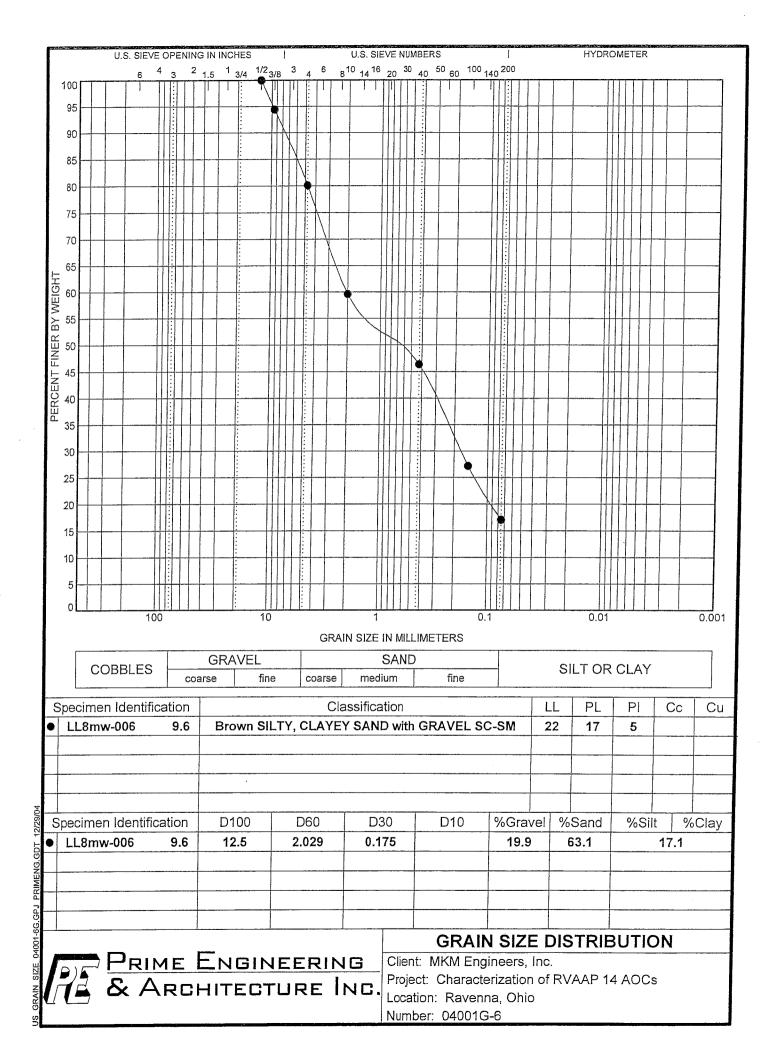
Number: 04001G-6

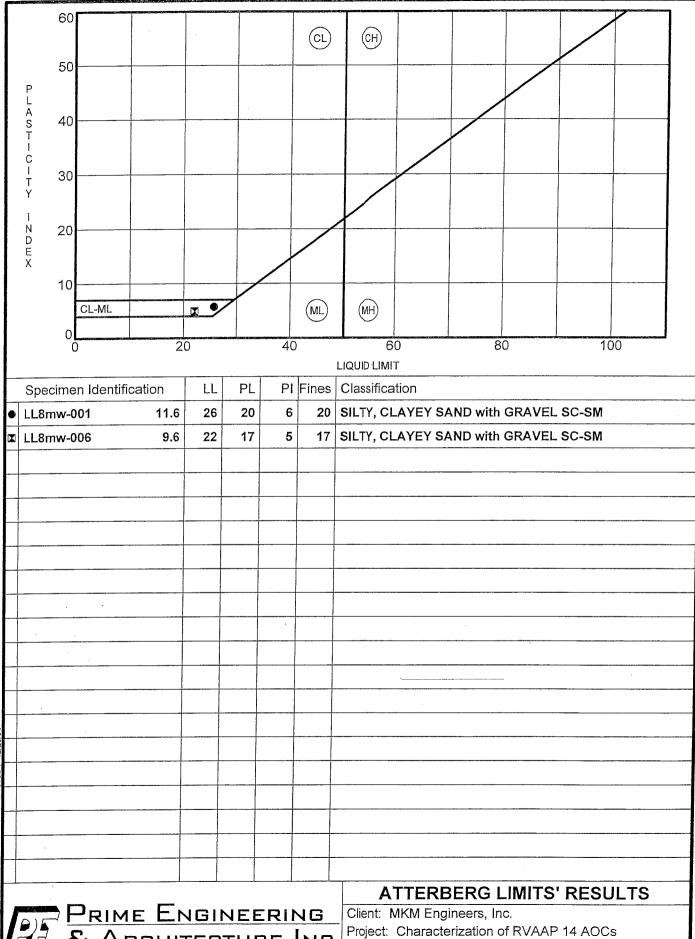
Location ID: LLBm	w - 00	10-12-6	Field	d Sampling F	Report			a Army Ammuni zation of 14 RVA				
Date: 12-08-	0-1				- 40							
Source	Cwan	ndwater / Produc	000000000000000000000000000000000000000	mpling Informa		Soils / Sediments / Sludge						
Method	Bailer	nuwater / Produc	00000000000000000000000000000000000000	Surface Wat	ter	Scoop Scoop		Trowel				
Machine	Pump			on Bomb		Bowl		Hand Auger				
			Dace	я вошо		Push Probe		Shelby Tube				
Type/Construction					1							
Miscellaneous	Well Purg	ing Form										
Sample Collection: 0840 hrs	Yes - No	Sample Ty	ne: Composite	e - MI - Fab		Location	Plotted or	n Mapa Staked in I	Field			
Sample Depth: 10-12 FT (If MI, # o	of increments taken: - Each Day - Each	Location	1300000	Estimate	d - Measured -	Surveyed			
Field Parameters (at time of sample)			Analytical	Parameters		O	ther Para	ımeters				
PID / FID Readings:		VOC		TPH GRO		Corrosivity						
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cyanide						
		Explosives		Chromium +6		Ignitability						
Sample:	ppm	Propellants		Nitrate								
Water Level	FT	TAL Metals		Geotechnical	~		QA Sam	ples	•			
Temperature	°C	Pesticides/PCBs				MS/MSD Yes / N)	NA			
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID			NA			
рН	units	TOC				Equipment Rinse ID			NA			
Turbidity	N.T.U.	Grain Size	<u> </u>			Trip Blank ID	NA					
Soil sample description should in Munsell Color Odor Staini Water sample description should Color Odor Sheen Turbi	clude: ing Texture include:	Sorting Plasticin	y Moisture		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: ERC	FUS	(Please	Print)	Alline field the enjoyees the territory	Revie	wed by: Siek	Ever	Sue Bolico Date:	(Please Print)			
Signature: 45	<u> </u>		·		Sign	nature: Sue	Boles	/	15/05			



Location ID: LL8mw		(8-10 ft)	Field	l Sampling F	Report			na Army Ammuniti ization of 14 RVA			
			Sai	mpling Informa	ntion						
Source					ter	Sediments / Sludge					
Method	Bailer		Sam	ple Bottle		Scoop		Trowel			
1	Pump		Bacc	on Bomb		Bowl		Hand Auger			
		<u> </u>				Push Probe		Shelby Tube	V		
Type/Construction									l		
	Well Purg Yes - No	ing Form									
Sample Collection: OSAchrs Sample Depth: FT (be	elow surfac		If MI, # 0	e - MI - Grab of increments taken: - Each Day - Each	Location	Location		n Map Staked in F			
Field Parameters (at time of sample)		An	alytical	Parameters		О	ther Para	ameters			
PID / FID Readings:		VOC		TPH GRO		Corrosivity					
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	anide				
		Explosives		Chromium +6		Ignitability					
Sample:	ppm	Propellants		Nitrate							
Water Level	FT	TAL Metals		Geotechnical	-		QA San	aples	'		
Temperature	°C	Pesticides/PCBs				MS/MSD	Yes / No	0	NA		
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID			NA		
рН	units	TOC				Equipment Rinse ID			NA		
Turbidity	N.T.U.	Grain Size	V			Trip Blank ID			NA		
	Sample	e Description				e ID: Apany: Vided: MS/MSD - Duplicate		- Field Blanks			
Soil sample description should incl Munsell Color Odor Staining Water sample description should in Color Odor Sheen Turbidi	g Texture c lude: ity		oisture	on the state of the		Same as Above - As					
Logged By: EUC E	<u>≡us</u> N	(Please Prin	ıt)			ewed by: Syc nature:	Boles Bolu	Date: 06/1	Please Print)		

Signature: _





Prime Engineering & Architecture Inc.

Location: Ravenna, Ohio Number: 04001G-6

Prime Engineering & Architecture

Project No.: 04001G
Project: RVAAP
Client: MKM Engineers
Technician(s): Stephanie and Brandi
Date: 12/28/2004

Sample No:	pH Reading:	Specific Gravity:
LL8mw-001	8.5	2.728
LL8mw-006	8.5	2.739

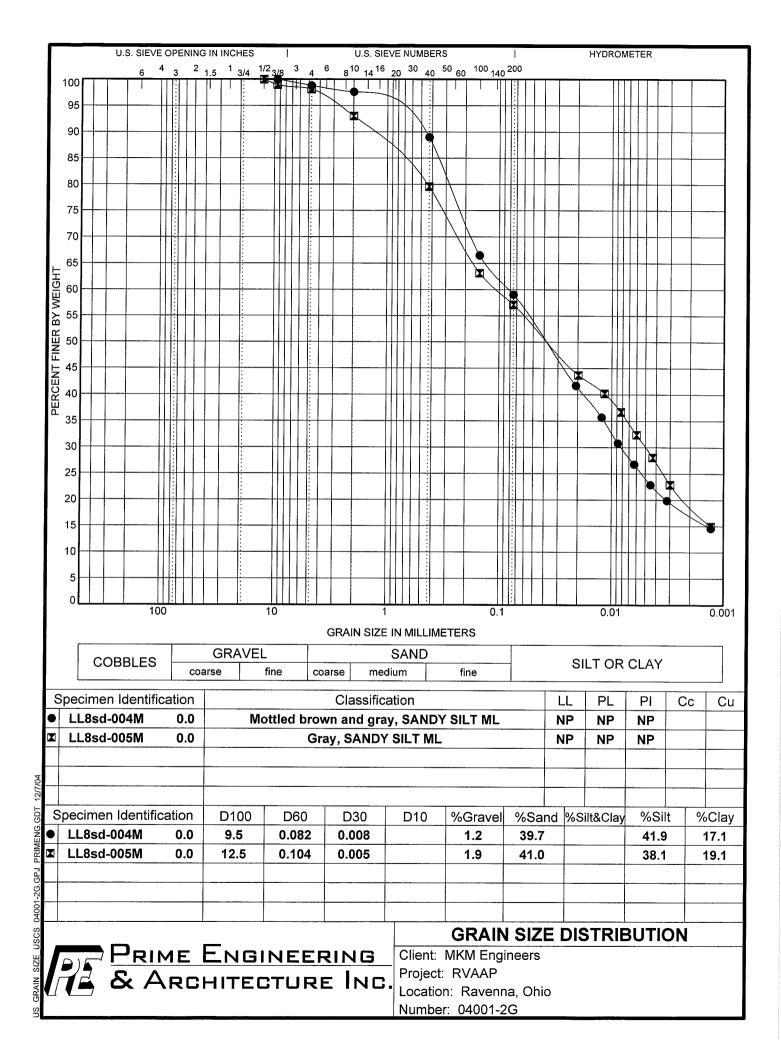
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Sample Number	Depth (feet)	Moisture Content %	Liquid Limit	Plastic Limit	Plast. Index	Organic Content (%)		C Sand	M Sand %	F Sand	Silt	Silt&Clay Comb.	Clay	Soil Description	Class. Symbol
F16sd-001M	0.0	33.7	/V	70		3.4	0.3	1.7		<u>%</u> 13.1			% 26.6	Drown I FAM OLAVANITH CAMP	Symbol
F16sd-002M	0.0	193.0				0.7								The state of the s	CL
				ļ		9.7	1.0	1.0	4.7	16.5	52.4	76.8	24.4	Black LEAN CLAY WITH SAND, trace gravel	CL
LL8sd-004M	0.0	169.9	NP	NP	NP	15	1.2	1.2	8.6	29.9	41.9	59.1	17.1		
LL8sd-005M	0.0	108.2	NP	NP	NP	8.2	1.9	5.1					19.1	Trace graver	ML
LNWsd-043M	0.0			 				3.1	 					oray orabi oici, nace graver	ML
	0.0	120.2	ŃΡ	NP	NP	5.8	8.0	1.2	8.7	25.3	49.3	63.9	14.6	Gray SANDY SILT, trace gravel	ML
LNWsd-044M	0.0	111.3	NP	NP	NP	7.5	0.0	10	13 8	28.3	41.2	56.0	15.8		IVIL
LNWsd-045M	0.0	140.8	NP	NID											ML
	0.0	140.0	INP	NP	NP	9.4	1.0	3.0	13.7	19.2	46.8	63.2	16.4	Gray SANDY SILT, trace gravel	ML
LNWsd-046M	0.0	132.5	NP	NP	NP	7.9	0.0	0.3	5.2	17.4	57.6	77.1	19.4	Gray SILT WITH SAND	MI

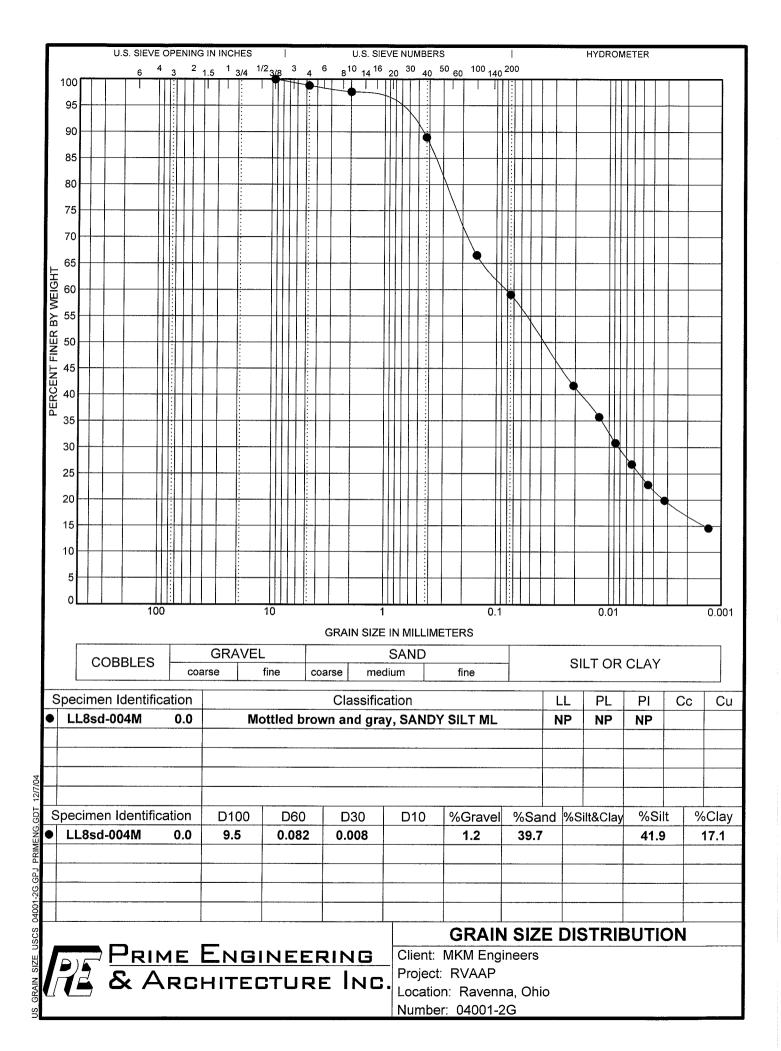


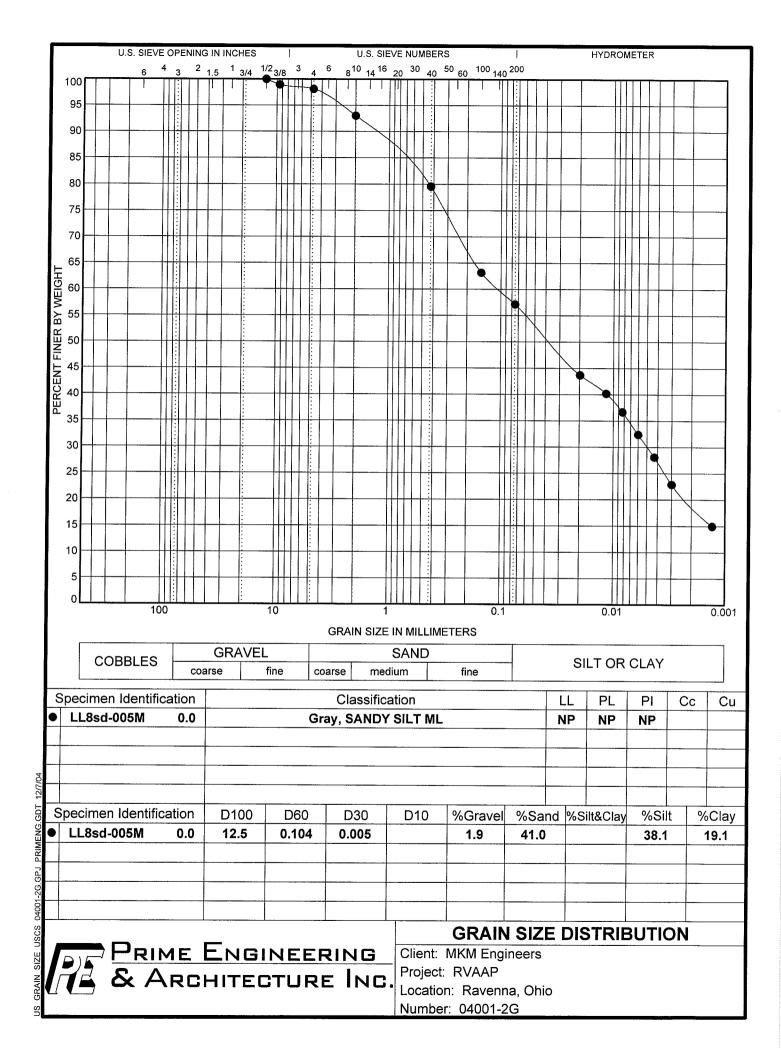
Project: RVAAP

Location: Ravenna, Ohio



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Location ID: 4185 Date: 11-2-0	d-00	4M-S1)	Field	d Sampling	Report		Ravenn	ıa Army Ammı	unition Plant
11-2-0)4							ization of 14 RV	
Date: 🔑 🕖			Sa	T- F-					
Source	Gra	undwater / Product /	Sa	mpling Inform Surface Wa		Soi	ils / Sedimen) Cludge	
Method	Bailer	indwater / 110duct	Sam	Surface Wa ple Bottle	iter /	Scoop	us / yeum	Trowel	
Metuor	Pump			ри Воть		Bowl	-	Hand Auger	
						Push Probe		Plastic Liner	
Type/Construction		<i></i>				Mattocks		****	1
Miscellaneous	Well Purg Yes - No	ring Form	1				L	L.————————————————————————————————————	1
Sample Collection: 1430	2 hrs	Sample Type:	If MI, # o	e - MP - Grab of increments taken:	30	Location	Plotted on Estimate	Map Staked i	in Field - Surveyed
Sample Depth: 611	FT (below surface	Decon: D	Dedicated	- Each Day - Each	1 Location				
Field Parameters (at time of sample)		An	alytical	Parameters		О	ther Para	meters	/
PID / FID Readings:	7177	VOC		TPH GRO		Corrosivity			
Background:	ppm	SVOC	X	TPH DRO		Reactivity Sulfide/Cy	yanide		
0	0.0	Explosives	X	Chromium +6		Ignitability			
Sample:	O.O ppm	Propellants		Nitrate					
Water Level		TAL Metals	X				QA Sam	ples	
Temperature	.€	Pesticides/PCBs	X			MS/MSD	Yes / No		NA
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID			NA
рН	units	TOC	X			Equipment Rinse ID			NA
Turbidity	N.T.U.	Grain Size	X		Texas code, nonexe, consequent	Trip Blank ID			NA
No-od		e Description	กา		Split Sample		Sample		
104R3/3	11000	Corted	To S	7/-	Name:			/	7
med plas	hich	sill w	1/FV	Come	Agency/Com Address:	pany:			
On Jean	J 20/	<u>60}</u>						/	
0,23		•		i			_/-		
						ided: MS/MSD = Duplicate Same as Above - As		Field Blanks	
Soil sample description should									
Munsell Color Odor Sta	_	Sorting Plasticity Mo	isture						
Vater sample description shou									
Color Odor Sheen Tu	en programme in the contract of the contract		- Theodore			-04	<		
ogged By: Nephen	1 Doing	20W (Please Print)			wed by: ERICE	N N	- 2	(Please Print)
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LAB USCS SUMMARY 04001-36.GPJ PRIMENG	the land of the land
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Sample Number	Depth (feet)	Moisture Content %	Liquid Limit	Limit	Plast. Index	Organic Content	Agg.	C Sand	M Sand	F Sand	Silt	Silt&Clay Comb.	Clay	Soil Description	Class.
ASYsd-024M	0.0	228.4	NP	% NP	NP	(%) 9.3	% 0.0	0.5	10	%	%				Symbo
B12sd-023M	0.0	116.7				6.8		-	4.8		·		25.4	nulle sailu	ML
B12sd-024M	0.0	189.1	NP	NP	NP		1.7	2.1	3.3				31.9		CL
CBLsd-001M	0.0	45.2	NP	NP		11.7	0.7	9.5	4.4		 		23.7	and gray one with owner trace travel	ML
CBLsd-002M	0.0	34.9	NP		NP	3.3	6.4	5.8	9.0				16.9	Brown SANDY SILT, trace gravel	ML
CBLsd-003M	0.0	62.2		NP	NP	3.5	1.7	2.1	5.2	-	56.0	73.7	17.7	Brown SILT WITH SAND, trace gravel	ML
L12MW-242	9.5	 	NP	NP	NP	4	4.2	2.1	3.9	10.3	56.4	79.5	23.2	Brown SILT WITH SAND, trace gravel	ML
L12MW-242		19.1	NP	NP	NP		0.0	0.0	0.2	0.5		99.3		Gray SILT, trace sand	ML
L12MW-244	13.5	27.5	NP	NP	NP		0.0	0.0	0.0	0.0		100.0		Gray SILT	ML
	7.5	17.1	33	22	11		0.3	1.9	4.9	12.8		80.1		Brown LEAN CLAY WITH SAND, trace gravel	CL
LL7sd-012M	0.0	36.8	NP	NP	NP	5.9	12.6	16.2	20.6	18.4	25.4	32.2	6.8	Brown SILTY SAND, little gravel	
LL7sd-029M	0.0	317.2	NP	NP	NP	39.8	2.1	3.7	13.8	27.7	44.5	52.7	8.2	Dark brown SANDY SILT, trace gravel	SM
LL8sd-001M	0.0	274.4	NP	NP	NP	26.1	0.6	5.2	11.2	10.8	54,4	72.3	17.9	Dark brown SILT WITH SAND, trace gravel	ML
LL8sd-002M	0.0	281.4	NP	NP	NP	20.8	3.4	7.9					20.7		ML
LL8sd-003M	0.0	140.8	NP	NP	NP	11.1	0.4	3.4					19.3	Gray SANDY SILT, trace gravel	ML
LL8sd-006M	0.0	60.9	NP	NP.	NP	5.8	4.4	4.2					18.9	Gray SANDY SILT, trace gravel	ML
					J				1 1 1 1	2-1.7	37.1	50.0	10.9	Gray SANDY SILT, trace gravel	ML



Project: RVAAP

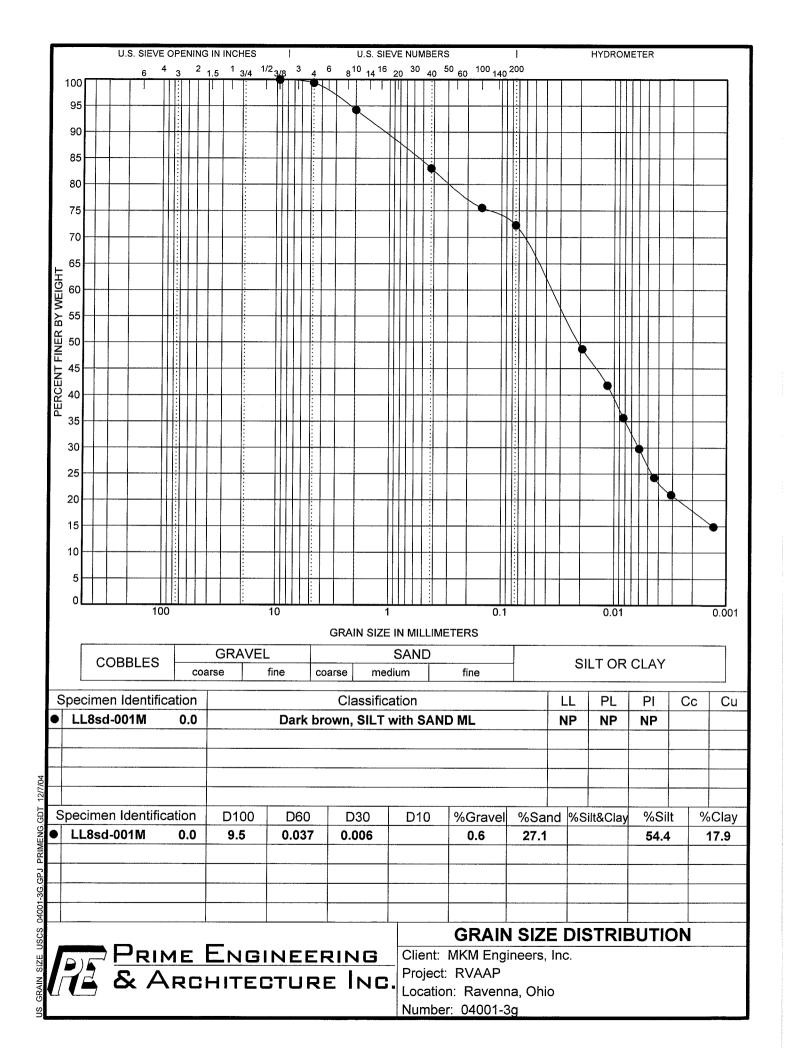
Location: Ravenna, Ohio

Number: 04001-3g

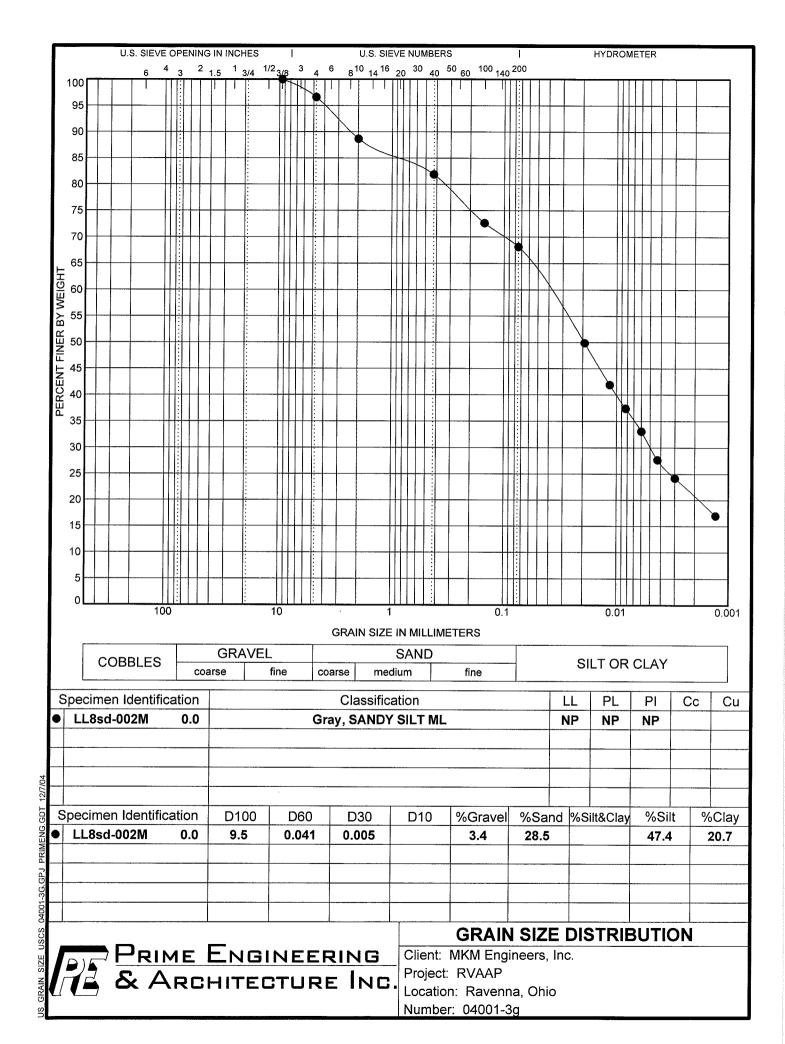
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1100	1		Field	d Sampling 1	Report		_		*** ***
Location ID: L & SQ		1 - Sa						ia Army Ammur ization of 14 RV	
Date: 11 08 00	f								
			Sa	mpling Inform	ation				
Source	Grou	ındwater / Product		Surface Wa	iter /	Soil	s /Sedimen	ts / Sludge	
Method	Bailer		Sam	ple Bottle		Scoop	X	Trowel	
	Pump		Baco	on Bomb		Bowl		Hand Auger	
		/				Push Probe		Plastic Liner	X
Type/Construction						Mattocks			
Miscellaneous	Well Purg Yes - No	ing Form		12 (12) (12) (12) (13					
Sample Collection: 1625 hrs	s	Sample Type: C			_ 30	Location:	Plotted or	1 Map Staked in	Field
Sample Depth: 0-1 FT	(below surfac	ce) Decon: De		of increments taken: - Each Day - Each			Estimate	d - Measured -	Surveyed
Field Parameters (at time of sample)		Ana	lytical	Parameters		O	ther Para	nmeters	
PID / FID Readings:		voc		TPH GRO		Corrosivity			
Background:	ppm	SVOC	X	TPH DRO		Reactivity Sulfide/Cy	anide		
0,0	:	Explosives	X	Chromium +6		Ignitability			
Sample: O. C	O ppm	Propellants	X	Nitrate					
Water Level	FT	TAL Metals	X				QA Sam	ples	
Temperature	°C	Pesticides/PCBs	X			MS/MSD	Yes / Ne		NA
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID			NA
pH	units	TOC	X			Equipment Binse ID			NA
Turbidity	N.T.U.	Grain Size	X			Trip Blank ID			NA
no odos, n	Sample	e Description			Split Sample		Sample	5171995	
			. \		-				
Some	9	0010-	e d		Agency/Com	pany:			
104R 310	. ~	codar, 1	40	Stoil,re					_
	. (Mara 1-	^	al Carte	1				
wet 9	non 1	/ war c	hoe	24W 200 11	*QA/QC Prov Parameters:	ided: MS/MSLiv Emplicate - Same av Above - As		- Field Blanks	
Sad low	avel	. wen	Som	re					
\sim \sim \sim \sim \sim					/				
S'14 & 9	x clay)						- 14:00 miles	
Soil sample description should in	x Clow clude:)							
Soul Sample description should in Munsell Color Odor Staini				,					
	ing Texture								
Munsell Color Odor Staini	ng Texture								
Munsell Color Odor Staini Water sample description should t	ng Texture	Sorting Plasticity Moi.				wed by:	Fus		(Please Print)

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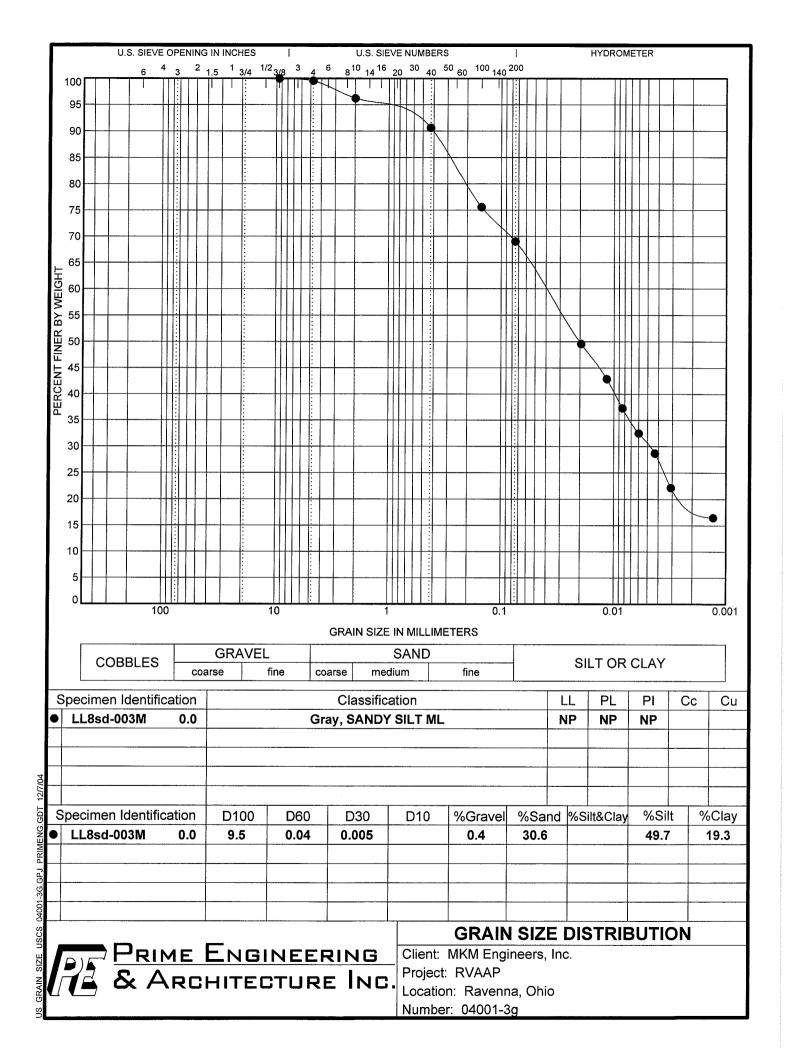
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Location ID: LUSS	A - 002	M - 5 15	Fiel	d Sampling	Report		Davient	na Army Ammunii	tion Plant
Date: 1108	1	<u> </u>						ization of 14 RVA	
			Sa	mpling Inforn	nation .			•	
Source	Gro	ındwater / Product		Surface W	/-	So	ils /(Sedimen	rk / Sludge	
Method	Bailer		Sam	ple Bottle	71	Scoop	X	Trowel	
	Pump		Bac	on Bornb		Bowl		Hand Auger	
						Push Probe		Plastic Liner	×
Type/Construction					1	Mattocks			
Miscellaneous	Well Purg Yes - No				1000				
Sample Collection: 1100	_ hrs	Sample Type: Co	omposite	e MI - Grab	. 30	Location		n Man - Staked in F	
Sample Depth: () -	FT (below surface	ce) Decon: De	dicated	- Each Day - Eac	The same of the sa		Estimate	d - Measured - S	sui veyed
Field Parameters (at time of sample)		Ana	lytical	l Parameters		C	other Para	nmeters	
PID'/ FID Readings:		VOC		TPH GRO		Corrosivity			
	Q. O ppm	SVOC		TPH DRO		Reactivity Sulfide/C	yanide		
C	9. <i>0</i>	Explosives	1	Chromium +6		Ignitability			
Sample:	ppm	Propellants		Nitrate					
Water Level	FT	TAL Metals	'		4		QA Sam	ples	
Temperature	~ ℃	Pesticides/PCBs				MS/MSD	Ye) / No		NA
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID	4850	-002M-DUP	NA
рН	units	TOC	1			Equipment Rinse ID			
Tyrbidity	N.T.U.	Grain Size	/			Trip Blank ID			M
	Sample	Description			Split Sample	Spli : ID: Wesd - Co	t Sample 32M - SD		
NO Oder,	No stan	nine				Jahl JENT			
104R3/2 ,	met,	von plastic			Agency/Con	pany: USACE	يكسديا	ILE	
					(CO 1	DE MARTIN WITH		JR Pave	
						vided: MS/MSD - Driplicate Same as Abovo - As		Field Blanks	
						7		eansize	
							,		
Soil sample description should	d include:				12.327				
Munsell Color Odor Sto	aining Texture	Sorting Plasticity Mois	ture						
Vater sample description show	uld include:								
Color Odor Sheen Tu	arbidity			13(0.0.0.2)					
ogged By: Snake	er Gubl	(Please Print)			Revie	wed by: EPUC	EUUS		Please Print)
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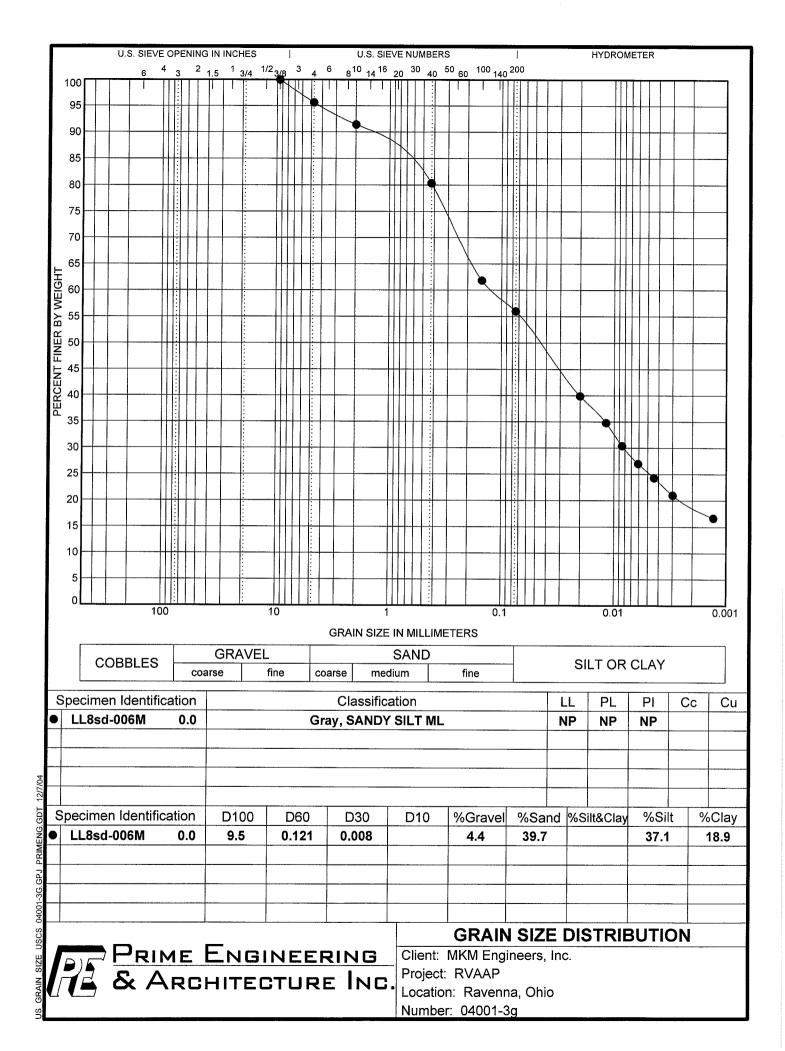


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Location ID: 1	?sd -003 pelo 4	м <u>- S</u> D	Fiel	d Sampling	Report			na Army Amm ization of 14 R	
		<u>J </u>	, Sa	mpling Inform	ation				
Source	Gro	undwater / Product	1	Surface W	ater /	Soi	ils / Sedimen	rks / Sludge	
Method	Bailer		San	ıple Bottle		Scoop	×	Trowel	
1	Pump		Bac	on Bomb		Bowl		Hand Auger	
ı						Push Probe		Plastic Liner	×
Type/Construction		/			1	Mattocks			
Miscellaneous	Well Purg	ing Form	/						
Sample Collection: 350		Sample Type: (Composite	e (MI) (A	30	Location	Plotted or	n Map Staked i	in Field
Sample Depth: 0 - 1			IfMI,#	of increments taken - Each Day - Eac			Estimate	d - Measured	- Surveyed
Field Parameters (at time of sample)				l Parameters		0	ther Para	imeters	
PID / FID Readings:		VOC		TPH GRO		Corrosivity			
	, O ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	yanide		
0	.2	Explosives	×	Chromium +6		Ignitability			
Sample:	ppm	Propellants		Nitrate					
Water Level	FT	TAL Metals	X				QA Sam	ples	
Temperature	°c	Pesticides/PCBs				MS/MSD	Yes / No	,	NA
Sp. Conductance:	иMHOs	Cyanides				Duplicate ID			NA
рН	units	TOC	X			Equipment Ripse ID			NA
Turbidity	N.T.U.	Grain Size	X			Trip Blank ID		-	NA
no odov.		e Description			Split Sample		Sample		
TOYR 3/2	L, we	to nongl	تخالع	(Name:				
nellosta	el, Cier	· · · · · · · · · · · · · · · · · · ·	3500	- 5: Nr	Agency/Com Address:	pany:	***		
		<u> </u>				epetic		<u> </u>	
			ided; MS/MSD - Duplicare - Same as Above - As		Field Blanks				
Soil sample description shou	ld include:								
Munsell Color Odor S	Staining Texture	Sorting Plasticity Mo	isture		1				
Vater sample description sho	ould include:								
Color Odor Sheen I	Turbidity							77999	
ogged By: Sudke	er Gu	(Please Print))		Review	wed by: Elic ature: END	- EUS		(Please Print)
ignature:	Sille.				Sign	ature: 2151_	-	Date: 24	A/5



Location ID: LLSSd Date: / 1 /6 8	- 0º6	M-Sd	Field	d Sampling l	Report	*		-	Ammunition	
Date:/ 1 /6 §	104									
			Sa	mpling Inform	ation					
Source	Grou	undwater / Product		Surface Wa	iter /	Soi	ls (Sedimen	slud	lge	
Method	Bailer		Sam	ple Bottle		Scoop	·*X	Trowe	1	
	Pump		Baco	on Bomb		Bowl		Hand .	Auger	
						Push Probe		Plastic	: Liner	×
Type/Construction						Mattocks				
Miscellaneous	Well Purg Yes - No	ing Form	/							
Sample Collection: [540] hrs	nple Collection: \(\frac{1540}{540} \) hrs Sample Type: Composite - MI/- (Location			Staked in Field	
Sample Depth:FT (below surfac			of increments taken: - Each Day - Each			Estimate	d - Me	asured - Surve	eyea
Field Parameters (at time of sample)		Ana	lytical	Parameters		0	ther Para	meter		
PID' / FID Readings:		VOC		TPH GRO		Corrosivity				
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	vanide			
0.	0	Explosives	X	Chromium +6		Ignitability				
Sample: O,O	ppm	Propellants		Nitrate					_	
	_	ļ—————————————————————————————————————	ļ <u></u>							
Water Level	FT	TAL Metals	X				QA Sam	ples		
Water Level Temperature	FT °C	TAL Metals Pesticides/PCBs	X			MS/MSD	QA Sam		N ₂	A
						MS/MSD Duplicate ID	Yes / No	- ') NA	
Temperature	°C	Pesticides/PCBs	×				Yes / No	- '	37.4	L
Temperature Sp. Conductance:	°C uMHOs units N.T.U.	Pesticides/PCBs Cyanides TOC Grain Size				Duplicate ID Equipment Rinse ID Trip Blank ID	Yes / No	- ') NA	
Temperature Sp. Conductance: pH	°C uMHOs units N.T.U.	Pesticides/PCBs Cyanides TOC Grain Size Description	X	Sand 20/j	Split Sample Name: Agency/Com Address:	Duplicate ID Equipment Rinse ID Trip Blank ID Split ID:	Yes / No	-006	NA M~ ERNA	
Temperature Sp. Conductance: pH Purbidity NOOdor, No.	units N.T.U. Sample O.A.C. Lude: Include: Include: Include:	Pesticides/PCBs Cyanides TOC Grain Size Pescription Clay Cla	X	2 Sand 20/j	Name: Agency/Com Address:	Duplicate ID Equipment Rinse ID Trip Blank ID Split	Yes / No LL8sd Sample	- 006	NA M~ ERNA	

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Sample Number	Depth (feet)	Moisture Content	Liquid Limit %	Plastic Limit %		Organic Content (%)		C Sand %	M Sand %	F Sand %	 Silt&Clay Comb.	Clay %	Soil Description	Class. Symbol
LL8mw-004	7.5	16.0	38	23	14		0.6	1.2	4.1	22.2	72.0		Brown LEAN CLAY WITH SAND (CL), trace gravel	CL

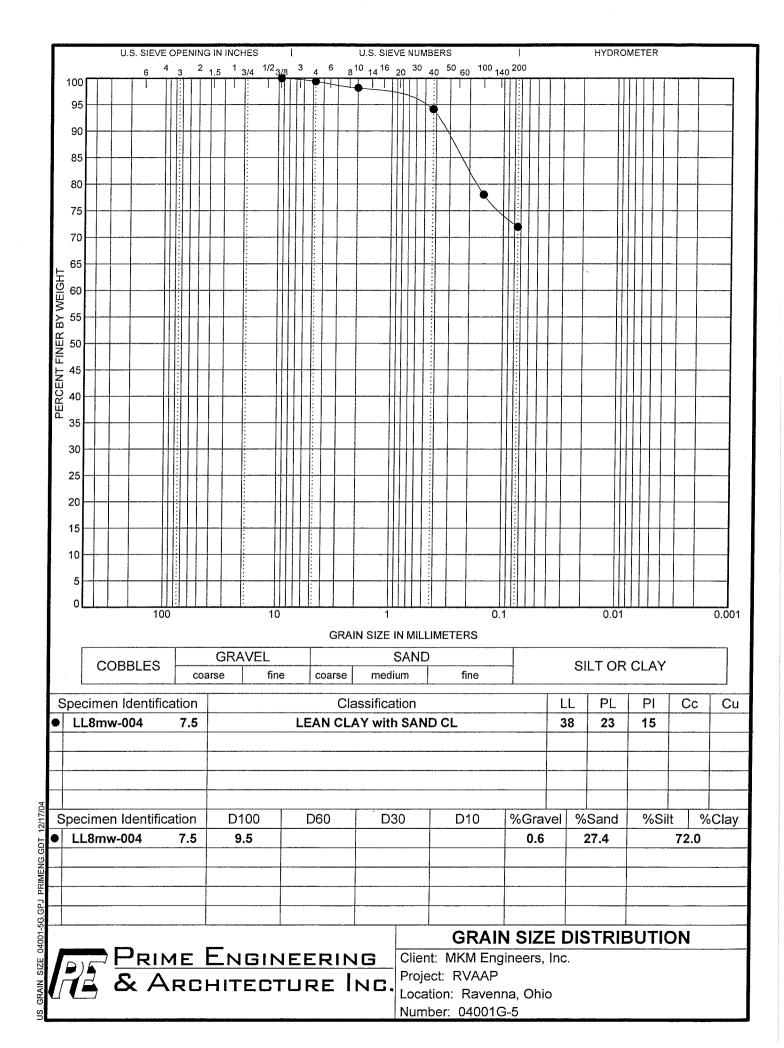


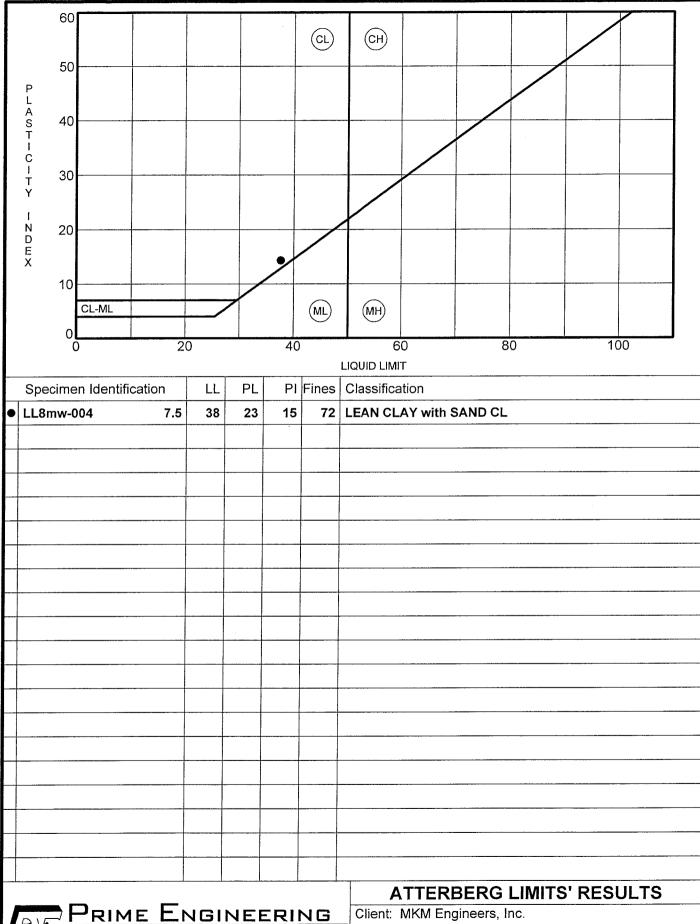
Summary of Laboratory Results Client: MKM Engineers, Inc.

Project: RVAAP

Location: Ravenna, Ohio

Location ID:LL8 w	1W-0	04 (6-84	Fiel	d Sampling F	Report			my Ammunition on of 14 RVAAP	
Date: 12-06-	04								
			Sa	mpling Informa	ation				
Source	Grou	ndwater / Produc	t	Surface Wat	ter	Soil	Sediments / S	ludge	
Method	Bailer		Sam	ple Bottle		Scoop	Tre	owel	
	Pump		Bac	on Bomb		Bowl	Ha	and Auger	
		<u>'</u>				Push Probe	Sh	elby Tube	-
Type/Construction							- L L -		
Miscellaneous	Well Purg Yes - No	ing Form							
Sample Collection: \250 hr Sample Depth: 6-8 FT		• •	If MI, #	e - MI - Grab of increments taken: - Each Day - Each		Location	Plotted on Map Estimated -	Staked in Field Measured - Surv	> /eyed
Field Parameters (at time of sample)	(below surface			l Parameters	Document	o	ther Paramet	ters	
PID / FID Readings:		VOC		TPH GRO		Corrosivity			
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	/anide		+
		Explosives		Chromium +6		Ignitability			
Sample:	ppm	Propellants		Nitrate		-8			-
	FT							<u> </u>	
Water Level		TAL Metals		Geotechnical		1400400	QA Samples		
Temperature	°C uMHOs	Pesticides/PCBs	6			MS/MSD	Yes / No		NA •
Sp. Conductance:	units	Cyanides				Duplicate ID Equipment Rinse ID		N.	
pH Turbidity	N.T.U.	Grain Size		1		Trip Blank ID		N.	
Turbuity									
Soil sample description should in Munsell Color Odor Stain Water sample description should Color Odor Sheen Turb	nclude: ning Texture	Sorting Plasticin	ty Moisture			e ID:		i Blanks	
Logged By: EUC	No. 100 10000000	(Please	e Print)	ericonii more eperitore propose more e morillo il lil	Revi	ewed by: Sue B	ales	(Plea	ise Print)
Signature:	4					nature: Suu Br	0. 1	Date: 06/15/	105-





Project: RVAAP

Location: Ravenna, Ohio Number: 04001G-5

Project No.: 04001G

Project: RVAAP

Client: MKM Engineers

Technician(s): Stephanie and Brandi

Date: 12/17/2004

Sample No: pH Reading: Specific Gravity:

LL8mw-004 8.1 2.775

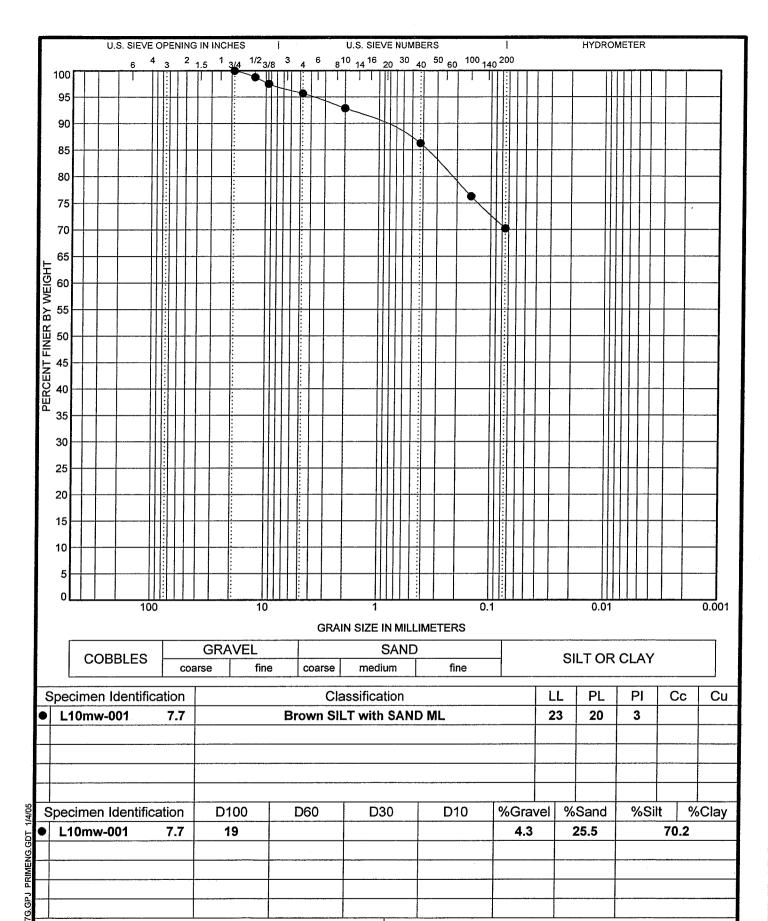
Sample Number	Depth (feet)	Moisture Content		Plastic Limit %	Plast. Index	Organic Content (%)		C Sand %	M Sand %	F Sand %	 Silt&Clay Comb.	Clay %	Soil Description	Class. Symbol
L10mw-001	7.7	15.7	23	20	3		4.3	2.8	6.6	16.0	70.2		Brown SILT WITH SAND, trace gravel	MI

Summary of Laboratory Results Client: MKM Engineers, Inc.

Project: Characterization of RVAAP 14 AOCs

Location: Ravenna, Ohio

Location ID: HOme	: - 001 - 04	(48-4)	Field	l Sampling R	Report			a Army Ammu zation of 14 RV		
			Sai	mpling Informa	tion					
Source	Grou	ındwater / Product		Surface Wat		Soil	Sedimen	ts / Sludge		
Method	Bailer		Sam	ple Bottle		Scoop		Trowel		
	Pump		Bacc	n Bomb		Bowl		Hand Auger		
		1				Push Probe		Shelby Tube		<u></u>
Type/Construction							'			
Miscellaneous	Well Purg Yes - No	ing Form								
Sample Collection: 1545 hrs Sample Depth: 6-8 FT (I	f MI, # o	of increments taken: - Each Day - Each		Location	Plotted or Estimate	Map Staked i d - Measured	n Field - Surveye	d
Field Parameters (at time of sample)				Parameters		Ot	ther Para	meters		
PID / FID Readings:	-	VOC		TPH GRO		Corrosivity				
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	anide			
		Explosives		Chromium +6		Ignitability				
Sample:	ppm	Propellants		Nitrate						
Water Level	FT	TAL Metals		Geotechnical	-		QA Sam	ples		
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	
Soil sample description should in		e Description			e ID:		- Field Blanks			
Munsell Color Odor Stain										
Water sample description should		<u> </u>								
	Color Odor Sheen Turbidity									
Logged By: DAV (DK) Signature:	FARNE	Please Print)	A Commence of the Commence of		ewed by: SUC Bo mature: Suc Bo	sles us)	O\2	(Please Pri	nt)

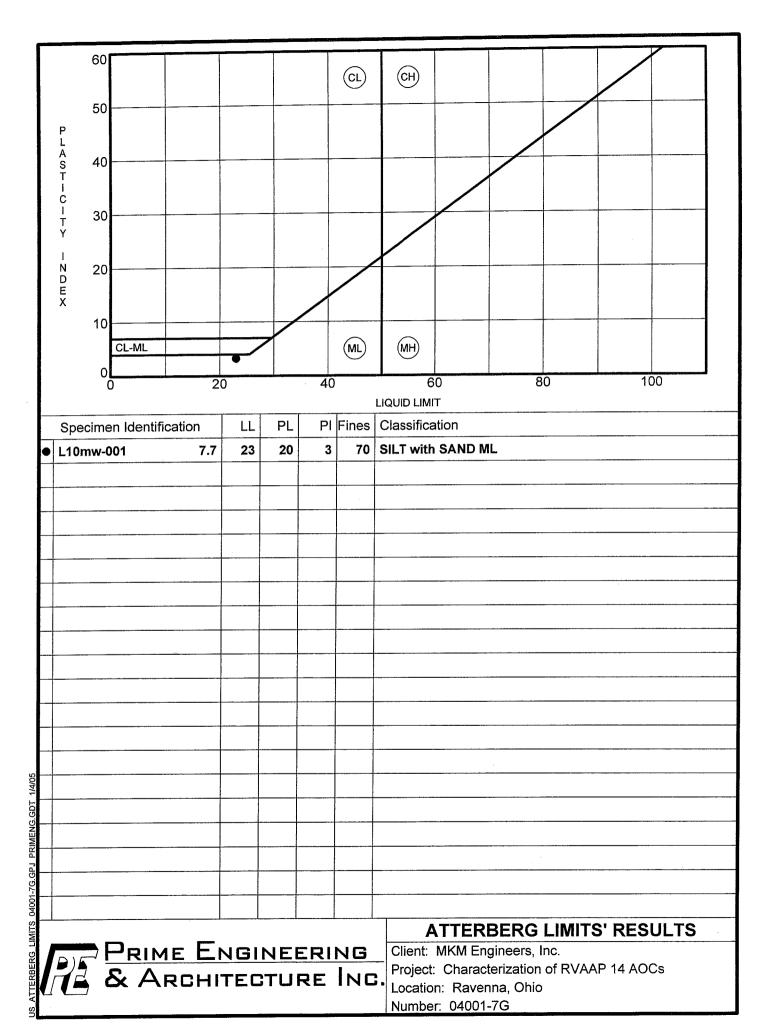


GRAIN SIZE DISTRIBUTION

Client: MKM Engineers, Inc.

Project: Characterization of RVAAP 14 AOCs

Location: Ravenna, Ohio Number: 04001-7G



Project No.: 04001G Project: RVAAP

Client: MKM Engineers

Technician(s): Stephanie and Brandi

Date: 1/4/2005

Sample No:

pH Reading:

Specific Gravity:

L10mw-001

10.07

2.725

Sample Number	Depth (feet)	Moisture Content %		Plastic Limit %		Organic Content (%)		C Sand %	M Sand	F Sand %	n/	Silt&Clay Comb.	Clay %	Soil Description	Class. Symbol
L10mw-004	9.7	14.2	20	17	3	(10)	2.2	2.6	11.0	27.1		57.2		Brown SANDY SILT, trace gravel	ML
L10mw-005	5.7	15.2	28	18	9		5.1	2.6	7.2	19.1		66.0		Brown SANDY LEAN CLAY, trace gravel	CL



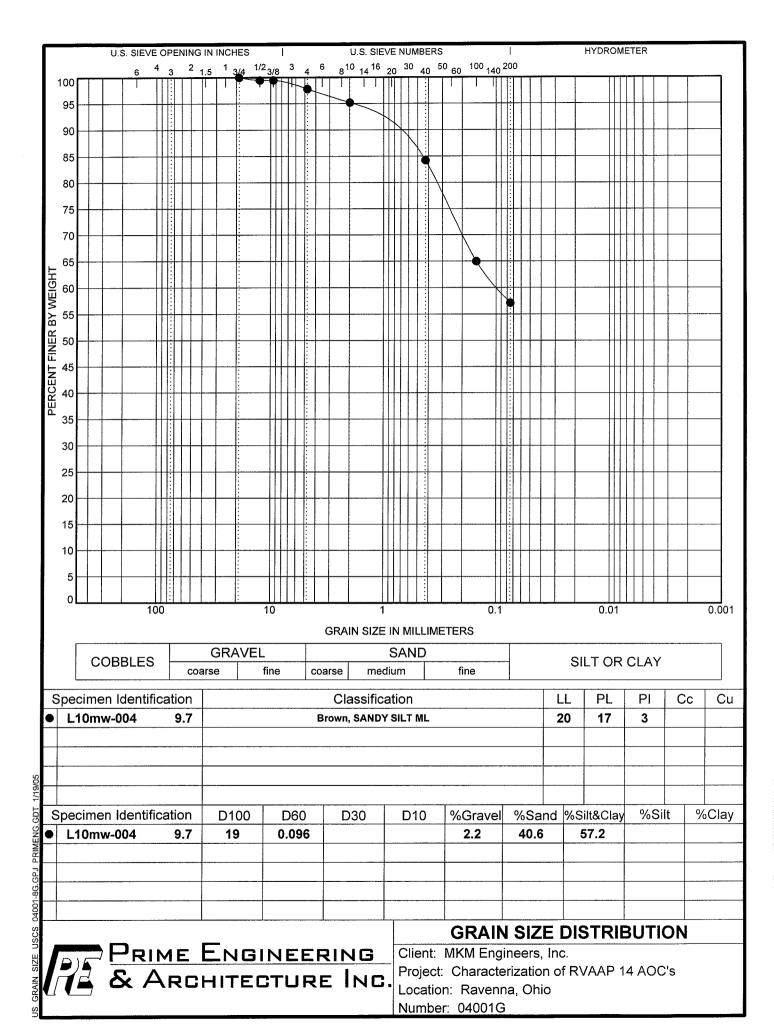
Summary of Laboratory Results

Client: MKM Engineers, Inc.

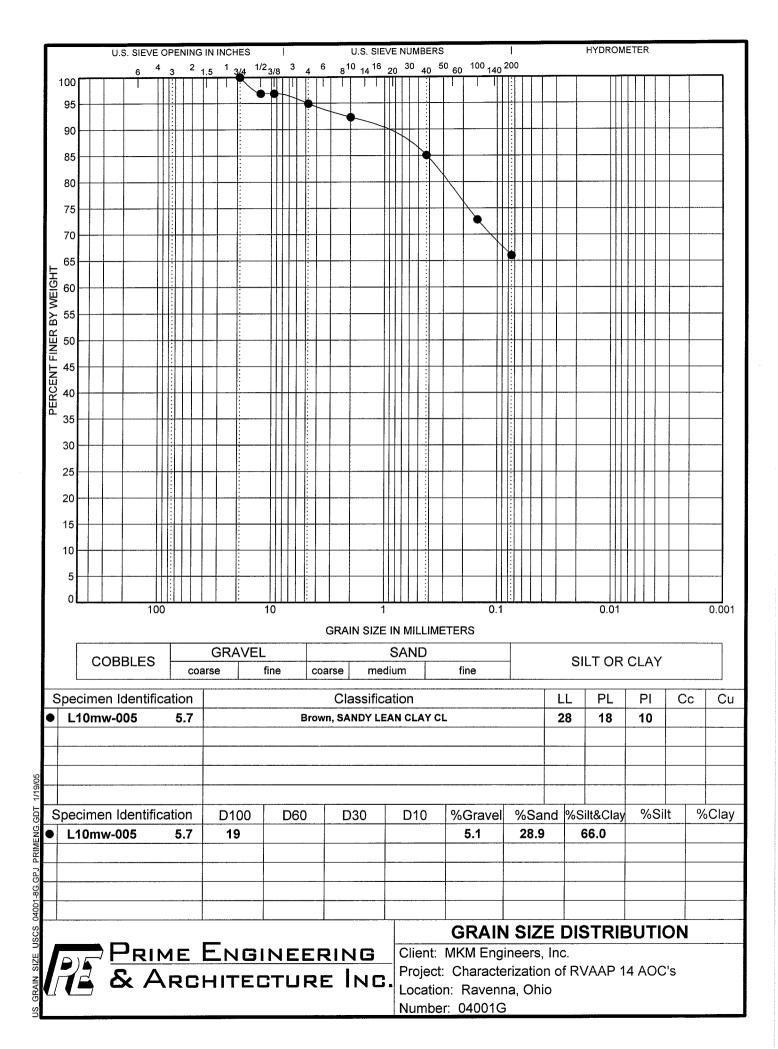
Project: Characterization of RVAAP 14 AOC's

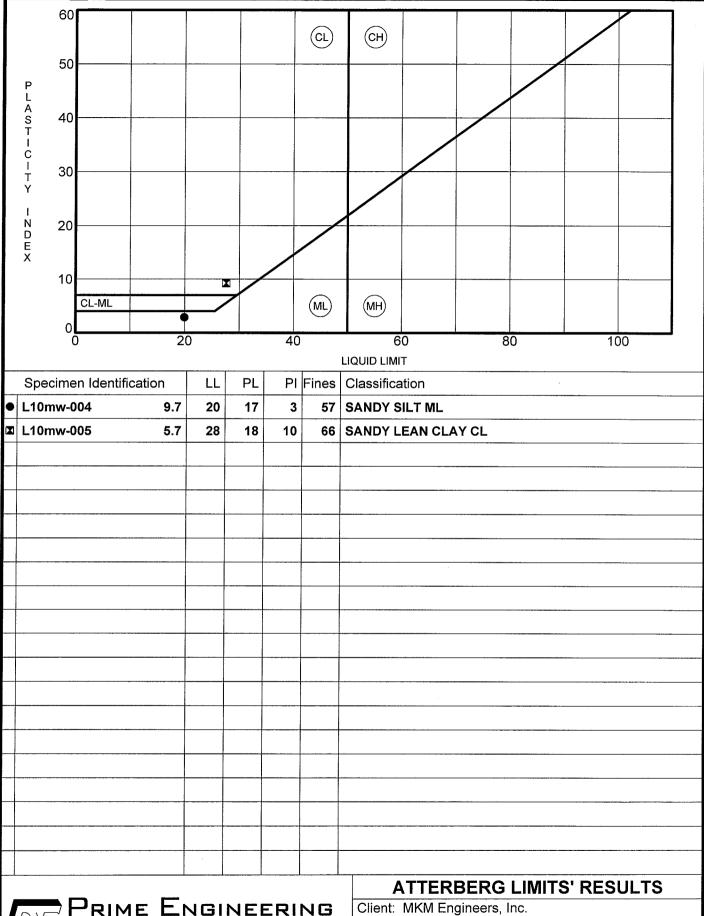
Location: Ravenna, Ohio

Location ID:	v-004	(8-10ft)	Field	l Sampling F	Report			Army Ammunition	
Date			<u> </u>	1: T.C.					
Course	Crow	undersoton / Duodu et		mpling Informa	SLUCIA ON LA MARINE	6		/ Cl d	
Source Method	Bailer	ndwater / Product		Surface Wat	ter	Scoop	Sediments /	Trowel	T
17141104	Pump			on Bomb		Bowl		Hand Auger	+-
	1 unip		Dace	и вошо				_	
T /C						Push Probe		Shelby Tube	<u> </u>
Type/Construction Miscellaneous	Well Purg	ing Form							
**************************************	Yes - No								
Sample Collection: 1245 hrs			If MI, # o	e - MI - Grab of increments taken:		Location	Plotted on M Estimated	lap Staked in Field - Measured - Surv	veyed
Sample Depth: 8-10 FT	(below surfac	e) Decon	Dedicated	- Each Day - Each	Location	: · · · · · · · · · · · · · · · · · · ·			
Field Parameters (at time of sample)			Analytical	Parameters		О	ther Param	eters	
PID / FID Readings:		VOC		TPH GRO		Corrosivity			
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	/anide		
		Explosives		Chromium +6		Ignitability			
Sample:	ppm	Propellants		Nitrate					
Water Level	FT	TAL Metals		Geotechnical			QA Sampl	es	
Temperature	°C	Pesticides/PCBs				MS/MSD	Yes / No	1	NA
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID		N.	A
pH	units	TOC				Equipment Rinse ID		N.	A
Turbidity	N.T.U.	Grain Size	<u> </u>			Trip Blank ID		N.	A
Soil sample description should in Munsell Color Odor Stain Water sample description should Color Odor Sheen Turb	iclude: ing Texture include:	Sorting Plasticity	v Moisture			e D;		eld Blanks	
Logged By: FUC F	eus A	(Please	Print)			wed by: <u>SUC</u>	Boles		ise Print)



Location ID:	- 005 05	(4-6 4)	Field	l Sampling R	leport		Ravenna Characteria	a Army Ammunition zation of 14 RVAAP	Plant AOCs
Date:									
	_		Sa	mpling Informa			<u></u>		
Source		indwater / Product		Surface Wat	er		Sediment		Τ
Method	Bailer			ple Bottle		Scoop		Trowel	+
	Pump		Bacc	on Bomb		Bowl		Hand Auger	
				STATE SECTION		Push Probe		Shelby Tube	~
Type/Construction									
Miscellaneous	Well Purg Yes - No								
Sample Collection: 1495 hrs	5	Sample Type:	Composite	e - MI - Grab		Location		Map Staked in Field - Measured - Surv	
Sample Depth: 4-6 FT	(below surfac	ce) Decon: I		- Each Day - Each			Estimated	i - Measured - Surv	cycu
Field Parameters (at time of sample)		An	alytical	Parameters		О	ther Para	meters	
PID / FID Readings:		VOC		TPH GRO		Corrosivity			
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	/anide		
		Explosives		Chromium +6		Ignitability			
Sample:	ppm	Propellants		Nitrate					
Water Level	FT	TAL Metals		Geotechnical			QA Sam	ples	
Temperature	°C	Pesticides/PCBs				MS/MSD	Yes / No	Ŋ	ĪΑ
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID		N.	4
рН	units	TOC				Equipment Rinse ID		NA	4
Turbidity	N.T.U.	Grain Size	/			Trip Blank ID		N _A	4
Soil sample description should in Munsell Color Odor Stain Water sample description should Color Odor Sheen Turb	iclude: ing Texture	Sorting Plasticity M.	loisture			e ID: npany: vided: MS/MSD - Duplicate Same as Above - As		- Field Blanks	
Logged By:	FW!	(Please Pri	nt)		Revie	ewed by: Syle	Boles	561-1	se Print)
Signature:	ENL				Sig	nature:	Deles	Date:/\S_/c	<u>'S</u>





LIMITS 04001-8G.GPJ PRIMENG.GDT

Prime Engineering & Architecture Inc.

Project: Characterization of RVAAP 14 AOC's

Location: Ravenna, Ohio Number: 04001G

Project No.: 04001G
Project: RVAAP
Client: MKM Engineers

Technician(s): Brandi

Date: 1/17/2005

Sample No:	pH Reading:	Specific Gravity:
L10mw-004	8.1	2.656
L10mw-005	8.2	2.801

12/1/04
GDT
PRIMENG.GDT
04001-2G.GPJ
SUMMARY
USCS
LAB
S

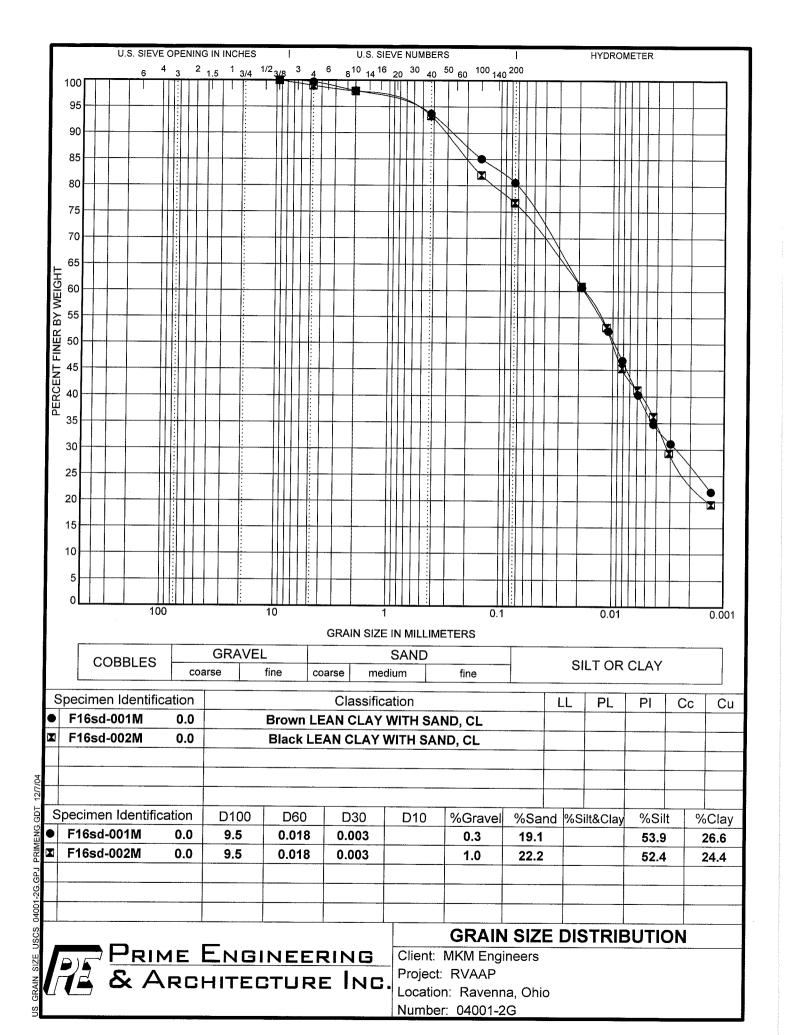
Sample Number	Depth (feet)	Moisture Conten	Liquid Limit	Plastic Limit	Plast.	Organic Content		C Sand	M	F	Silt	Silt&Clay Comb.	Clav	Soil Description	Class.
F16sd-001M	0.0	33.7	- %	%		(%)	%	%_	%	%	%		%	•	Symbol
F16sd-002M	0.0	193.0				3.4	0.3	1.7	 				26.6	L. Lace glavel	CL
LL8sd-004M	0.0		ND	\ <u>\</u>		9.7	1.0	1.0					24.4	Lace graver	CL
LL8sd-005M		169.9	NP	NP	NP	15	1.2	1.2					17.1	i alla giay or tibli oilli, tiace giavel	ML
	0.0	108.2	NP	NP	NP	8.2	1.9	5.1	13.4	22.4	38.1	57.1	19.1	Gray SANDY SILT, trace gravel	ML
LNWsd-043M	0.0	120.2	ΝP	NP	NP	5.8	8.0	1.2	8.7	25.3	49.3	63.9	14.6	Gray SANDY SILT, trace gravel	ML
LNWsd-044M	0.0	111.3	NP	NP	NP	7.5	0.0	1.0	13.8	28.3	41.2	56.9	15.8	Gray SANDY SILT	
LNWsd-045M	0.0	140.8	NP	NP	NP	9.4	1.0						16.4	City O/NOT CIE!	ML
LNWsd-046M	0.0	132.5	NP	NP	NP	7.9	0.0	0.3	 		ļ		19.4	Oldy Chitter Citi, trace graver	ML
				L		اــــــا				1	101.0	1 7 . 1	10.4	Gray SILT WITH SAND	l Mi



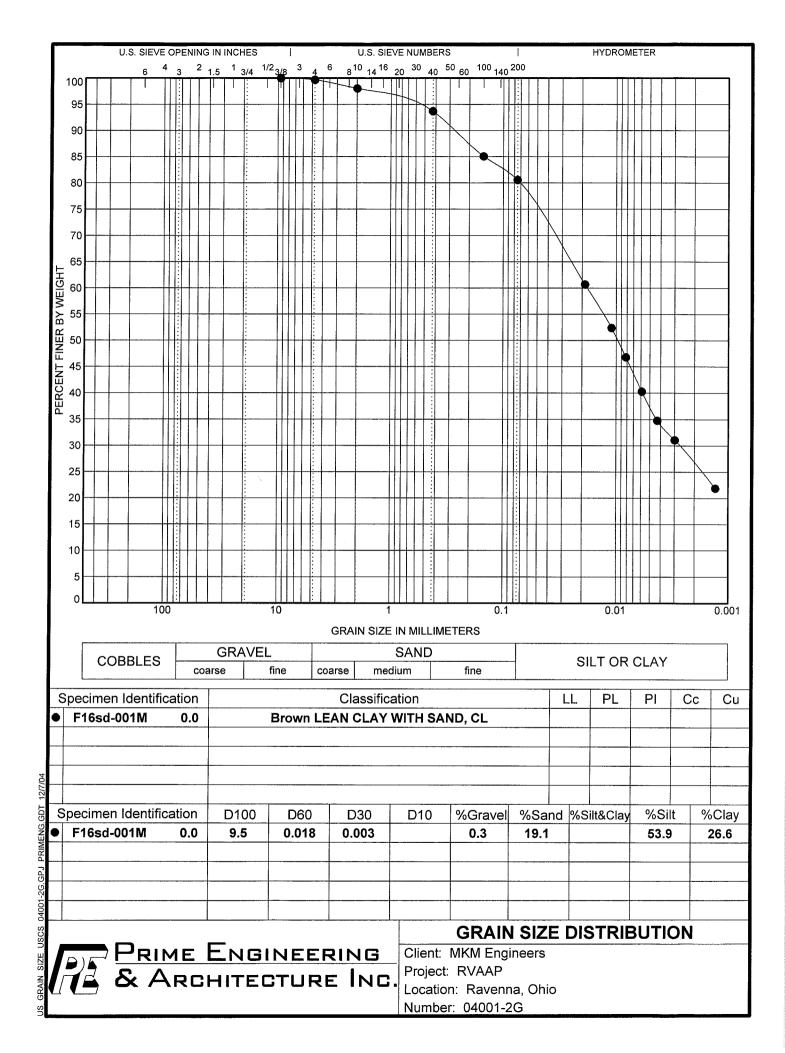
Summary of Laboratory Results Client: MKM Engineers

Project: RVAAP

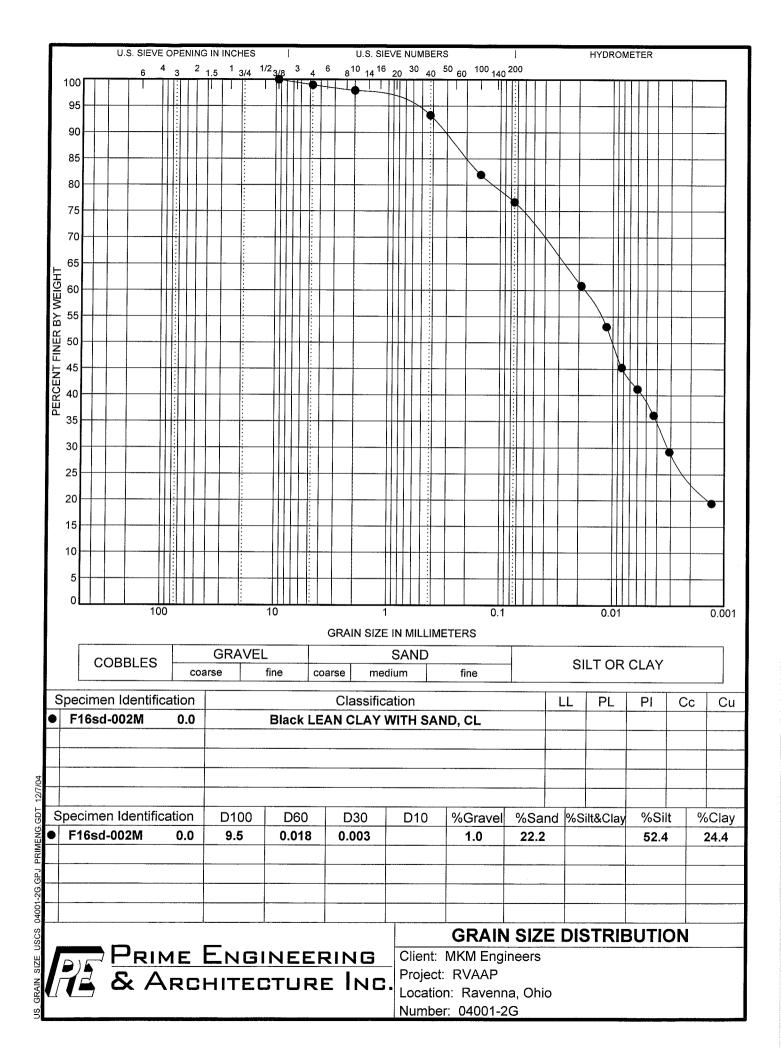
Location: Ravenna, Ohio Number: 04001-2G



	Location ID: F/650-001 M-5D Field Sampling Report Ravenna Army Ammunition Plant Characterization of 14 RVAAP AOCs									
Date:			Sou	mnling Inform	otion					
Source	Grov	ındwater / Product	Sa	mpling Inform: Surface Wa						
Method	Bailer	indwater / Froduct	Sami	ole Bottle	lei /	Scoop	is Cocumen	Trowel	T	
With the same of t	Pump		STATE OF THE PARTY	n Bomb		Bowl		Hand Auger	_	
	rump	/	Dace	ii Boliio			- V	Plastic Liner	X	
Type/Construction					<u> </u>	Push Probe 53 Mattocks	<u> </u>		+^	
Miscellaneous	Well Purg	ing Form	1		Hiraliya.					
Sample Collection: 1525 h		Sample Type: C	If MI, # o	Mi Grab f increments taken: - Each Day Each	30	Location	: Plotted or Estimate	Map Staked in Field - Measured - Sur	ld rveyed	
Field Parameters (at time of sample)		1	-	Parameters	. .	О	ther Para	meters		
PID / FID Readings:		VOC		TPH GRO		Corrosivity				
Background;	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	ranide			
()		Explosives	X	Chromium +6		Ignitability				
Sample: O.	O ppm	Propellants		Nitrate						
Water Level	FT	TAL Metals	X				QA Sam	ples		
Temperature	°C	Pesticides/PCBs				MS/MSD	Yes / No		NA	
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID	F1650.	-DOIM-DUP	√A	
рН	units	TOC	X			Equipment Rinse ID			NA)	
Turbidity	N.T.U.	Grain Size	乂		e	Trip Blank ID		<u> </u>	YA)	
Soil sample description should in Munsell Color Odor Stain Water sample description should Color Odor Sheen Turb	nclude: ning Texture linclude:	/ Clay + Jand	Split Sample ID: FIUSD -OOIM-SD Name: JOhn Jen J (Courter-ER-EP) Agency/Company: USALE - Louis ville Address: 600 St MARTIN WITHER KING SR PLAZA LOUSVILLE KY 40202 QA/QC Provided: MS/MSD Duplicate - Trip Blanks - Field Blanks Parameters: Same as Above - As Listed Reviewed by: ERIC EUIS (Please Print)							
Signature:	154				Sign	ature: 512	h	Date:Z_3	<u> </u>	
	. 0									



Location ID: F16s	d - 00	02 M-SD	Fiel	d Sampling	Report			a Army Ammi zation of 14 RV			
Date:	03/04										
			Sa	mpling Inform	ation						
Source	Gro	undwater / Product /		Surface Wa	iter /	Soi	Soils / Sediments / Sludge				
Method	Bailer		Sam	ple Bottle		Scoop		Trowel			
	Pump		Baco	on Bomb		Bowl		Hand Auger			
						Push Probe		Plastic Liner	\times		
Type/Construction						Mattocks					
Miscellaneous	Well Purg Yes - No	ing Form	/								
Sample Collection: 550 hrs		Sample Type: Confidence) Sample Type: Confidence Decon: Decon: Decon	mposite MI, # o	MI Grab of increments taken: - Each Day Each	30 Location	Location	Plotted on Estimated	Ma6 Staked in 1 - Measured	n Field - Surveyed		
Field Parameters (at time of sample)		Anal	ytical	Parameters		О	ther Para	meters			
PID / FID Readings:	· · · · · · · · · · · · · · · · · · ·	VOC		TPH GRO		Corrosivity					
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	varide				
0.0		Explosives	X	Chromium +6		Ignitability	,				
Sample: O.O	ppm	Propellants		Nitrate							
Water Level	FT	TAL Metals	×				QA Sam	ples			
Temperature	°C	Pesticides/PCBs				MS/MSD	Yes / No		NA		
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID			NA		
рН	units	TOC	X			Equipment Rinse ID			NA		
Turbidity	N.T.U.	Grain Size	Χ			Trip Plank ID			NA		
No Odol 10yr2/1 Black S	, Ñ		tura 1	~	Split Sample	ID:	Sample				
No Plasticity well	sorted				Agency/Com Address:	ipany:					
								/			
			rided: MS/MSD - Duplicate Same as Above - As		Field Blanks						
Soil sample description should inc	clude:										
Munsell Color Odor Stainin	ng Texture	Sorting Plasticity Moist									
Vater sample description should i	nclude:										
Color Odor Sheen Turbio								-			
ogged By: Vijay	Allur	(Please Print)			Reviev	wed by:	y Ell		(Please Print)		
ignature: Vrja	4		Sign	ature: 262	V~	Date: Z	3/05_				



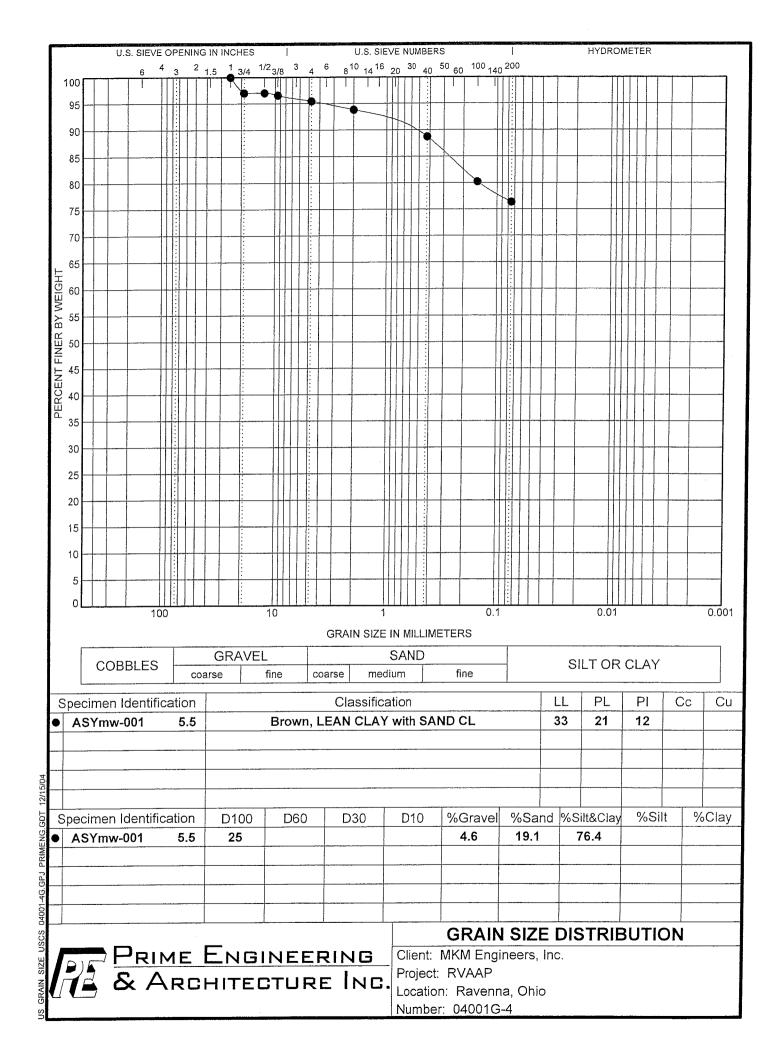
Sample Number		Moisture Content		Plastic Limit %		Organic Content (%)	Agg.	C Sand %	M Sand	F Sand %	Silt %	Silt&Clay Comb.	Clay %	Soil Description	Class. Symbol
ASYmw-001	5.5	17.7	33	21	12		4.6	1.6	5.1	12.4		76.4		Brown LEAN CLAY WITH SAND, trace gravel	CL
ASYmw-003	7.5	15.7	31	22	10		3.9	2.7	6.1	12.7		74.6		Brown LEAN CLAY WITH SAND, trace gravel	CL
ASYmw-007	9.5	16.5	32	21	11		0.4	1.5	4.8	13.8		79.4		Brown LEAN CLAY WITH SAND, trace gravel	CI

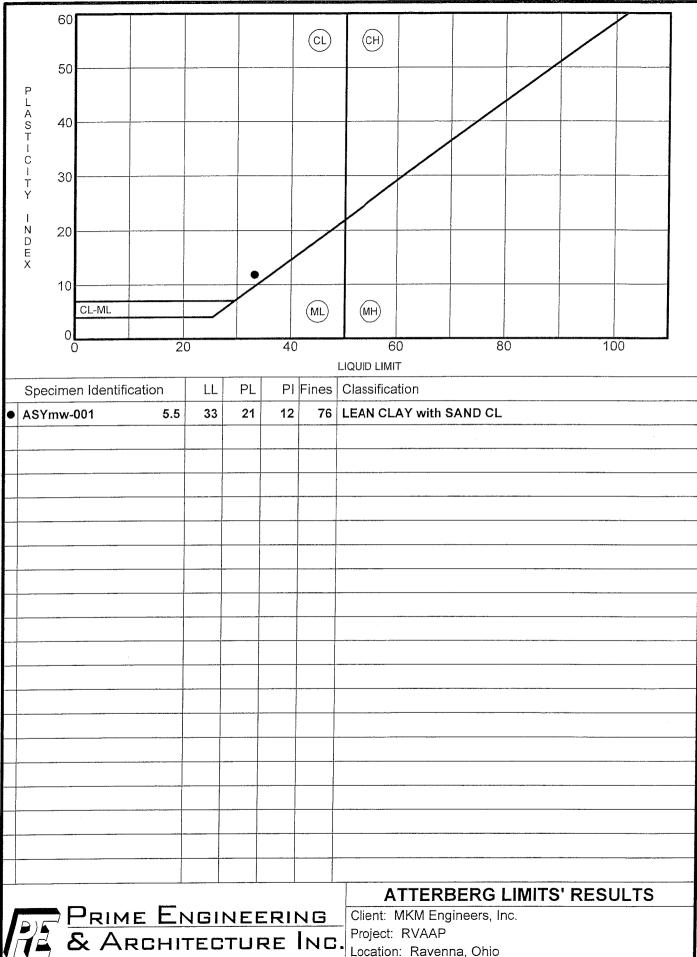
Summary of Laboratory Results Client: MKM Engineers, Inc.

Project: RVAAP

Location: Ravenna, Ohio

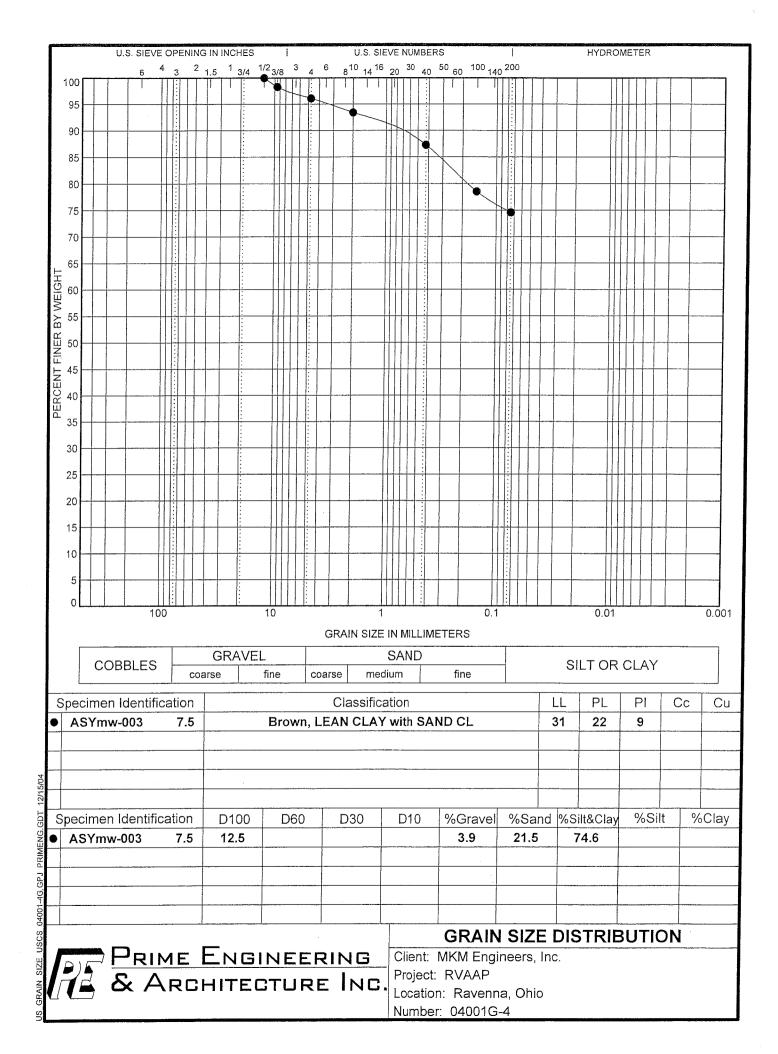
Location ID: ASY mw - OO (4-6ft) Field Sampling Report Ravenna Army Ammunition Plant Characterization of 14 RVAAP AOCs Date: 11-15-04											
			Sai	mpling Informa	tion						
Source	Grou	ndwater / Product		Surface Wat	****		Soils) Sediments / Sludge				
Method	Bailer		Sam	ple Bottle			Scoop		Trow	el	
	Pump		Baco	n Bomb			Bowl		Hand	Auger	
							Push Probe		Shelt	y Tube	~
Type/Construction											
Miscellaneous	Well Purg Yes - No	ing Form									
Sample Collection: 1415 hrs	I S	Sample Type: Co					Location	Plotted or	1 Мар	Staked in Field	>_
Sample Depth: 4-6 FT	(below surfac			of increments taken: - Each Day - Each	Location			Estimate	d - M	easured - Surve	eyed
Field Parameters (at time of sample)		Ana	lytical	Parameters			o	ther Para	mete	rs	
PID / FID Readings:		VOC		TPH GRO			Corrosivity				
Background:	ppm	SVOC		TPH DRO			Reactivity Sulfide/Cy	/anide			
		Explosives		Chromium +6			Ignitability				
Sample:	ppm	Propellants		Nitrate							
Water Level	FT	TAL Metals		Geotechnical	-	-		QA Sam	ples		
Temperature	°C	Pesticides/PCBs					MS/MSD	Yes / No)	N	Α
Sp. Conductance:	uMHOs	Cyanides					Duplicate ID			NA	.
Нq	units	TOC				_	Equipment Rinse ID			NA	
Turbidity	N.T.U.	Grain Size	1				Trip Blank ID			NA	L
Sample Description						Split Sample Split Sample Name: Agency/Company; Address: QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks Parameters: Same as Above - As Listed					
Soil sample description should in											
Munsell Color Odor Stain	_										
Water sample description should Color Odor Sheen Turb											
Logged By: DAVID K, DANAIST (Please Print) Reviewed by: SUC Boles (Please Print) Signature: Loudon Sheen Turbidity Reviewed by: SUC Boles (Please Print) Signature: Loudon Sheen Turbidity Reviewed by: SUC Boles (Please Print)											

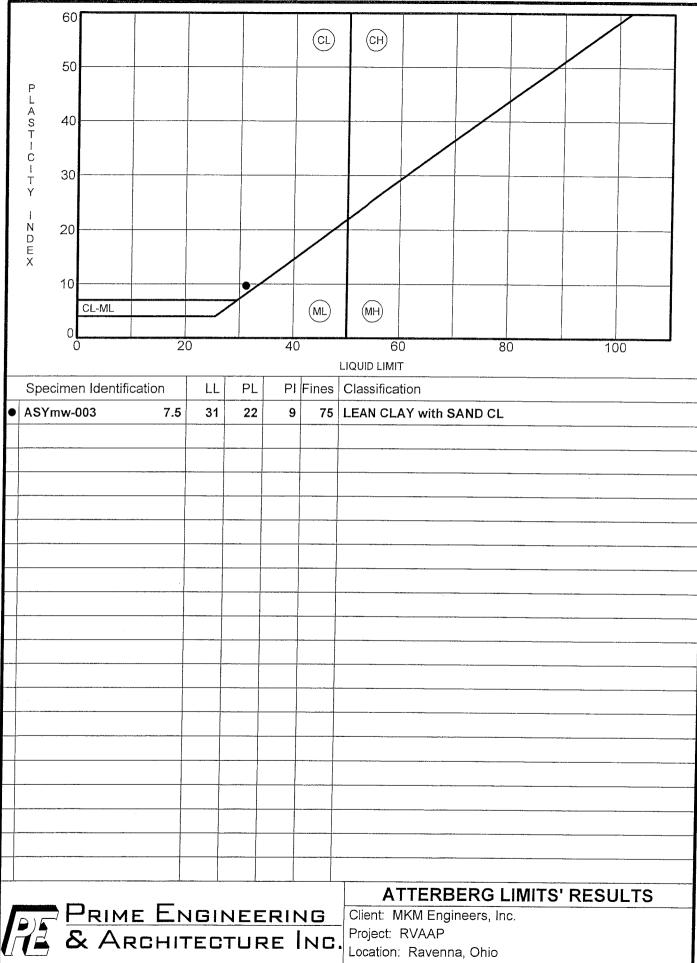




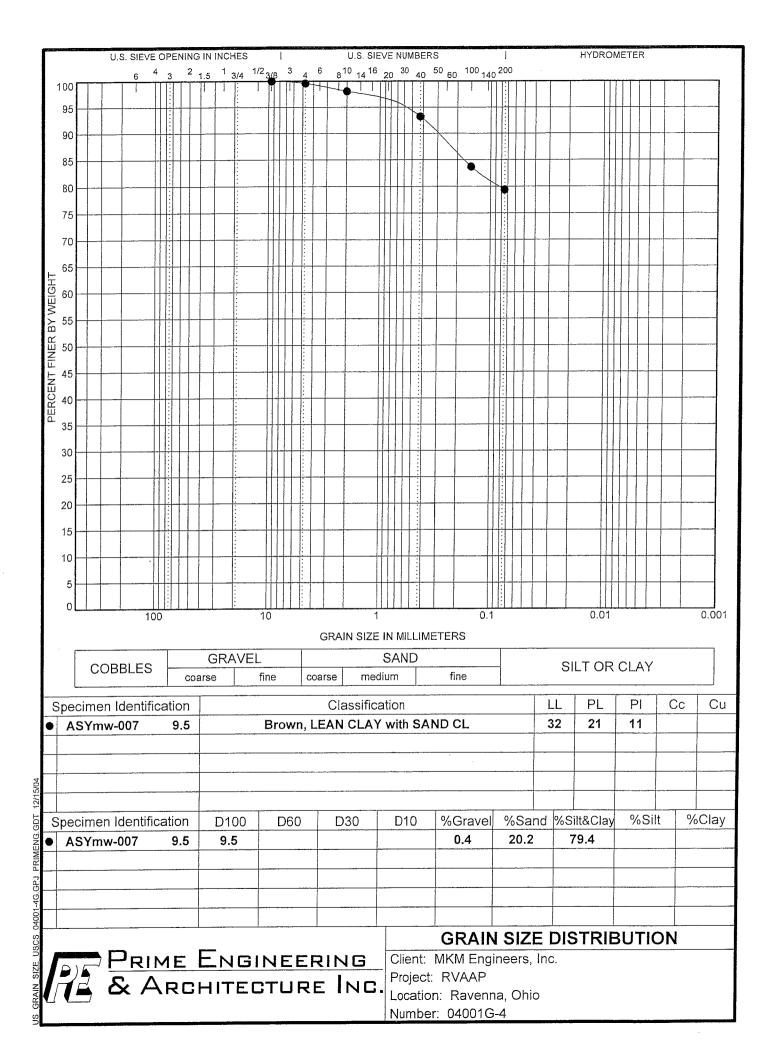
Location: Ravenna, Ohio Number: 04001G-4

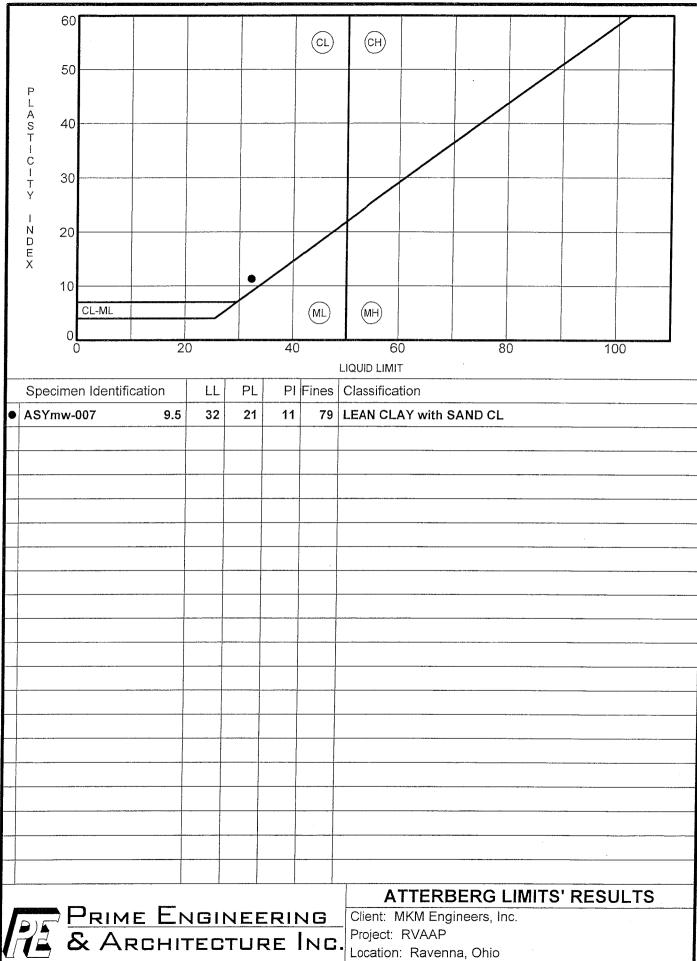
Location ID: ASY www - 003 (6-84) Field Sampling Report Ravenna Army Ammunition Plant Characterization of 14 RVAAP AOCs Date: 11-11-04										
			Sai	npling Informa	ition					
Source	Grou	ndwater / Product		Surface Wat	er	Soils Sediments / Sludge				
Method	Bailer		Samı	ole Bottle		Scoop		Trowel		
	Pump		Baco	n Bomb		Bowl		Hand Auger		
						Push Probe		Shelby Tube	~	
Type/Construction										
Miscellaneous	Well Purg Yes - No	ing Form								
Sample Collection: 1245 hrs Sample Depth: 6-8 FT		Sample Typ e) Decon:	If MI, # o	- MI - Grab of increments taken: - Each Day - Each	Location	Location		Map Staked in Fiel - Measured - Sur		
Field Parameters (at time of sample)			Analytical	Parameters		О	ther Paran	neters	•	
PID / FID Readings:		VOC		TPH GRO		Corrosivity				
Background:	ppm	SVOC		TPH DRO		Reactivity Sulfide/Cy	yanide			
		Explosives		Chromium +6		Ignitability				
Sample:	ppm	Propellants		Nitrate						
Water Level	FT	TAL Metals		Geotechnical			QA Samp	les		
Temperature	°C	Pesticides/PCBs				MS/MSD	Yes / No		NA	
Sp. Conductance:	иМНОs	Cyanides				Duplicate ID		1	NΑ	
рH	units	TOC				Equipment Rinse ID		1	NΑ	
Turbidity	N.T.U.	Grain Size				Trip Blank ID		1	NΑ	
	Sampl	e Description			Split Sample Split Sample ID: Name: Agency/Company: Address:					
Soil sample description should include:						QA/QC Provided: MS/MSD - Duplicate - Trip Blanks - Field Blanks Parameters: Same as Above - As Listed				
Munsell Color Odor Stain	ing Texture	Sorting Plasticity	Moisture					7786 7886 7886		
Water sample description should	include:									
Color Odor Sheen Turb		**************************************	e presta	the second of the second of the second			1			
Logged By: Signature: Signature:	. EANN Ear	(Please I	Print)			ewed by: <u>NC</u>	Boles	Date: 04/5	case Print)	





Location ID: ASY mw - 007 (8-10ff) Date: 11-12-04								a Army Ammı zation of 14 RV						
			S	ampling Inform	ation									
Source	Grou	ndwater / Product	50.00	Surface Wa	la Slak-Baro kon Jahr 6 / 66	Soils') Sediments / Sludge								
Method	Bailer		Sa	mple Bottle		Scoop		Trowel						
	Pump			icon Bomb		Bowl		Hand Auger						
						Push Probe		Shelby Tube	1					
Type/Construction							ı	<u> </u>						
Miscellaneous	Well Purg Yes - No	ing Form												
Sample Collection: 1230 hrs	!	Sample Typ	pe: Compos	ite - MI - Grab)	Locatiquí	: Plotted or	Map Staked	in Field					
Sample Depth: 8-10 FT	(below surfac	ee) Decon :		# of increments taken: d - Each Day - Each		`	Estimate	d - Measured	- Surveyed					
Field Parameters (at time of sample)			Analytic	al Parameters		О	ther Para	meters						
PID / FID Readings:		VOC		TPH GRO		Corrosivity								
Background:	ppm	svoc		TPH DRO		Reactivity Sulfide/Cyanide								
		Explosives		Chromium +6		Ignitability								
Sample:	ppm	Propellants		Nitrate										
Water Level	FT	TAL Metals		Geotechnical	/		QA Sam	ples						
Temperature	°C	Pesticides/PCBs				MS/MSD	Yes / No		NA					
Sp. Conductance:	uMHOs	Cyanides				Duplicate ID			NA					
рH	units	TOC		***		Equipment Rinse ID			NA					
Turbidity	N.T.U.	Grain Size	V	1		Trip Blank ID			NA					
Soil sample description should include: Munsell Color Odor Staining Texture Sorting Plasticity Moisture Water sample description should include: Color Odor Sheen Turbidity						split te ID: apany: wided: MS/MSD - Duplicate Same as Above - As		Field Blanks						
Logged By: DAND Ky	EARN HE	(Pirase	Print)			ewed by: Successive Su	Boles	Date:	(Please Print)					





Project No.: 04001G Project: RVAAP

Client: MKM Engineers
Technician(s): Stephanie and Steve
Date: 12/9/2004

Sample No:	pH Reading:	Specific Gravity:
ASYMW-001 5-7'	7.4	2.691
ASYMW-003 6-8'	8.5	2.542
ASYMW-007 8-10'	7.6	2.672