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U.S. EPA Region III
Office of Analytical Services and Quality Assurance
Annapolis, Maryland

ANALYTICAL REPORT

RADFORD ARMY AMMUNITION PLANT
SUPERFUND F/F
Lab Request # REQ98118

May 26, 1998

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U.S. EPA Region III
Office of Analytical Services
and Quality Assurance
Annapolis, Maryland

May 26, 1998

ANALYTICAL RESULTS: RADFORD ARMY AMMUNITION PLANT [REQ98118]

Dear Robert Thomson (3HW50),

Enclosed is our analytical report for the above case. It is organized into several sections: Analytical Request and Sample Descriptions, Organic, Inorganic, and Microbiological Results. All data were peer reviewed.

Analytical Request and Sample Descriptions: (General)
Each laboratory assigned number, station, description, matrix, sample date and locational data is reported. A table summarizes the tests assigned to each sample. A glossary and qualifier code definition is provided.

Inorganic Results:
For requests assigned inorganic tests, results are grouped by service group, e.g., Metals. Sample results are reported; non-detects are provided with the actual quantitation limit. Method description and quality control protocols are described in analyst narratives.

Organic Results:
For requests assigned organic tests, results are grouped by service group, e.g., Volatile Organic Compounds. Only detected analytes are reported. Nominal Quantitation Limit (NQL) tables are provided for each service group. Specific information for the calculation of Actual Quantitation Limits (AQL) achieved for a given sample is included. Quality control values are provided in summary tables with acceptance criteria. Method description and quality control protocols are described in analyst narratives.

Microbiological Results:
For requests assigned microbiological tests, sample results and quality control values are incorporated into a single table. Method description and quality control protocols are described in analyst narratives.

If you have any questions we may be reached at 410-573-2600.

Approval for Release:

Susan Warner

Site contact: Catherine Dare (GANNETT FLEMING, INC)
Robert Thomson (3HW50)

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SAMPLE DESCRIPTIONS

Sample #	Station, Description	Matrix	Type	End Collection Date	End Collection Time	Latitude	Longitude
98040126	STA SS-08A, AREA D RAIL YARD	Soil	GRAB	03/30/98	13:50		
98040127	STA SL-08, AREA D RAIL YARD	Soil	GRAB	03/30/98	13:45		
98040128	STA SL-108, AREA D RAIL YARD	Soil	GRAB	03/30/98	13:55		
98040129	STA WW-04, AREA D RAIL YARD	Water - Type Unspecified	GRAB	03/30/98	12:05		
98040130	STA SL-10, AREA H BAGLOADING	Soil	GRAB	03/30/98	18:30		
98040131	STA SL-110, AREA H BAGLOADING	Soil	GRAB	03/30/98	18:40		
98040132	STA SL-11, AREA H BAGLOADING	Soil	GRAB	03/30/98	17:50		
98040133	STA WW-106, AREA H BAGLOADING	Water - Type Unspecified	GRAB	03/30/98	16:55		
98040134	STA WW-06, AREA H BAGLOADING	Water - Type Unspecified	GRAB	03/30/98	16:45		
98040135	STA FB-01, AREA H-BAGLOADING	Aqueous Blank	GRAB	03/30/98	15:55		
98040136	STA RB-01, AREA H-BAGLOADING	Aqueous Blank	GRAB	03/30/98	16:10		
98040201	STA SS-08A, AREA D RAIL YARD	Soil	GRAB	03/30/98	12:50		
98040202	STA SL-08, AREA D RAIL YARD	Soil	GRAB	03/30/98	13:45		
98040203	STA SL-108, AREA D RAIL YARD	Soil	GRAB	03/30/98	13:55		
98040204	STA SL-110, AREA H BAGLOADING	Soil	GRAB	03/30/98	18:40		
98040205	STA SL-10, AREA H BAGLOADING	Soil	GRAB	03/30/98	18:30		
98040206	STA SS-11A, AREA B-IGNITOR AREA	Soil	GRAB	03/30/98	10:18		
98040207	STA SS-11B, AREA B-IGNITOR AREA	Soil	GRAB	03/30/98	10:33		
98040208	STA SS-14, AREA E-BAGLOADING	Soil	GRAB	03/31/98	10:05		
98040209	STA SD-08, AREA G-NRSD STREAM	Soil	GRAB	03/31/98	11:45		
98040210	STA SD-06, AREA G-NRSD STREAM	Soil	GRAB	03/31/98	14:40		
98040211	STA SD-07, AREA G-NRSD STREAM	Soil	GRAB	03/31/98	12:25		
98040212	STA SL-11, AREA H BAGLOADING	Soil	GRAB	03/31/98	17:50		
98040213	STA SS-12, AREA B-IGNITOR AREA	Soil	GRAB	03/30/98	11:05		
98040214	STA SW-07, AREA G-NRSD STREAM	Water - Type Unspecified	GRAB	03/31/98	12:05		
98040215	STA WW-106, AREA H BAGLOADING	Water - Type Unspecified	GRAB	03/31/98	16:55		
98040216	STA WW-06, AREA H BAGLOADING	Water - Type Unspecified	GRAB	03/30/98	16:45		
98040217	STA WW-04, AREA D RAIL YARD	Water - Type Unspecified	GRAB	03/30/98	12:05		
98040218	STA FB-01, AREA H-BAGLOADING	Aqueous Blank	GRAB	03/30/98	15:55		
98040219	STA RB-01, AREA H-BAGLOADING	Aqueous Blank	GRAB	03/30/98	16:10		
98040220	STA WS-03, NR-WS-03	Soil	GRAB	03/30/98	10:15		
98040221	STA WS-04, NR-WS-04	Soil	GRAB	03/31/98	11:10		
98040222	STA WS-05, NR-WS-05	Soil	GRAB	03/31/98	12:05		

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Sample #	Station, Description	Matrix	Type	End Collection Date	End Collection Time	Latitude	Longitude
98040301	STA TR-05D, NR-TR-05D	Soil	GRAB	04/01/98	14:45		
98040302	STA TR-05B, NR-TR-05B	Soil	GRAB	04/01/98	14:37		
98040303	STA TR-05A, NR-TR-05A	Soil	GRAB	04/01/98	14:30		
98040304	STA TR-09B, NR-TR-09B	Soil	GRAB	04/02/98	14:05		
98040305	STA TR-04F, NR-TR-04F	Soil	GRAB	04/02/98	13:45		
98040306	STA TR-04FD, NR-TR-04FD	Soil	GRAB	04/02/98	13:45		
98040307	STA TR-04A, NR-TR-04A	Soil	GRAB	04/02/98	13:40		
98040308	STA TR-07C, NR-TR-07C	Soil	GRAB	04/02/98	14:35		
98040309	STA TR-07A, NR-TR-07A	Soil	GRAB	04/02/98	14:40		
98040310	STA TR-03E, NR-TR-03E	Soil	GRAB	04/02/98	10:40		
98040311	STA TR-02C, NR-TR-02C	Soil	GRAB	04/02/98	10:10		
98040312	STA TR-02A, NR-TR-02A	Soil	GRAB	04/02/98	10:05		
98040313	STA TR-01B, NR-TR-01B	Soil	GRAB	04/02/98	09:55		
98040314	STA TR-01A, NR-TR-01A	Soil	GRAB	04/02/98	09:50		
98040315	STA TR-04E, NR-TR-04E	Soil	GRAB	04/02/98	14:20		
98040316	STA SD-03, AREA G-NRSD STREAM	Soil	GRAB	04/01/98	14:05		
98040317	STA SD-04, AREA G-NRSD STREAM	Soil	GRAB	04/01/98	13:35		
98040318	STA SD-05, AREA G-NRSD STREAM	Soil	GRAB	04/01/98	15:10		
98040319	STA TB-02, FOUR POINTS	Aqueous Blank	GRAB	03/30/98	00:00		
98040320	STA SS-21, AREA I-BAGLOADING 440	Soil	GRAB	04/01/98	16:30		
98040321	STA SS-20, AREA I-BAGLOADING 440	Soil	GRAB	04/01/98	17:05		
98040322	STA RB-02, AREA I -BAGLOADING 440	Aqueous Blank	GRAB	04/01/98	17:55		
98040323	STA FB-02, AREA I -BAGLOADING 440	Aqueous Blank	GRAB	04/01/98	17:45		
98040324	STA SW-07, AREA G-NRSD STREAM	Water - Type Unspecified	GRAB	03/31/98	12:05		
98040325	STA SD-06, AREA G-NRSD STREAM	Soil	GRAB	03/31/98	14:40		
98040326	STA SD-08, AREA G-NRSD STREAM	Soil	GRAB	03/31/98	11:45		
98040327	STA SS-14, AREA E-BAGLOADING	Soil	GRAB	03/31/98	10:05		
98040328	STA SD-07, AREA G-NRSD STREAM	Soil	GRAB	03/31/98	12:25		
98040329	STA SS-08A, AREA D RAIL YARD	Soil	GRAB	03/30/98	13:50		
98040330	STA SL-08, AREA D RAIL YARD	Soil	GRAB	03/30/98	13:45		
98040331	STA SL-108, AREA D RAIL YARD	Soil	GRAB	03/30/98	13:55		
98040332	STA SL-110, AREA H BAGLOADING	Soil	GRAB	03/30/98	18:40		
98040333	STA SL-10, AREA H BAGLOADING	Soil	GRAB	03/30/98	18:30		

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Sample #	Station, Description	Matrix	Type	End Collection Date	End Collection Time	Latitude	Longitude
98040334	STA WW-04, AREA D RAIL YARD	Water - Type Unspecified	GRAB	03/30/98	12:05		
98040335	STA WW-106, AREA H BAGLOADING	Water - Type Unspecified	GRAB	03/30/98	16:55		
98040336	STA WW-06, AREA H BAGLOADING	Water - Type Unspecified	GRAB	03/30/98	16:45		
98040337	STA SL-11, AREA H BAGLOADING	Soil	GRAB	03/30/98	17:50		
98040338	STA TB-01, FOUR POINTS	Aqueous Blank	GRAB	03/29/98	00:00		
98040339	STA RB-01, AREA H-BAGLOADING	Aqueous Blank	GRAB	03/30/98	16:10		
98040340	STA FB-01, AREA H-BAGLOADING	Aqueous Blank	GRAB	03/30/98	15:55		

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TESTS REQUESTED

Inorganic Test Assigned	Sample No. 980401-														
	26	27	28	29	30	31	32	33	34	35	36				
Percent Dry Weight	X	X	X		X	X	X								

Organic Test Assigned	Sample No. 980401-														
	26	27	28	29	30	31	32	33	34	35	36				
PCBs and Pesticides by Gas Chromatography	X	X	X	X	X	X	X	X	X	X	X				
Semivolatile Organics by GC/MS	X	X	X	X	X	X	X	X	X	X	X				

Inorganic Test Assigned	Sample No. 980402-														
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Metals Analysis	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Percent Dry Weight	X	X	X	X	X	X	X	X	X	X	X	X	X		
Total Cyanide	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Organic Test Assigned	Sample No. 980402-														
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
PCBs and Pesticides by Gas Chromatography								X	X	X	X			X	
Semivolatile Organics by GC/MS								X	X	X	X			X	

(X = test was requested)

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TESTS REQUESTED

Inorganic Test Assigned	Sample No. 980402-														
	16	17	18	19	20	21	22								
Metals Analysis	X	X	X	X	X	X	X								
Percent Dry Weight					X	X	X								
Total Cyanide	X	X	X	X	X	X	X								

Organic Test Assigned	Sample No. 980402-														
	16	17	18	19	20	21	22								
PCBs and Pesticides by Gas Chromatography															
Semivolatile Organics by GC/MS															

Inorganic Test Assigned	Sample No. 980403-														
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Metals Analysis															
Percent Dry Weight	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Cyanide															

Organic Test Assigned	Sample No. 980403-														
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
PCBs and Pesticides by Gas Chromatography	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Semivolatile Organics by GC/MS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Volatile Organics by Purge and Trap GC/MS															

(X = test was requested)

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TESTS REQUESTED

Inorganic Test Assigned	Sample No. 980403-														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Metals Analysis	X	X	X		X	X	X	X							
Percent Dry Weight	X	X	X		X	X				X	X	X	X	X	X
Total Cyanide	X	X	X		X	X	X	X							

Organic Test Assigned	Sample No. 980403-														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
PCBs and Pesticides by Gas Chromatography	X	X	X		X	X	X	X							
Semivolatile Organics by GC/MS	X	X	X		X	X	X	X							
Volatile Organics by Purge and Trap GC/MS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Inorganic Test Assigned	Sample No. 980403-														
	31	32	33	34	35	36	37	38	39	40					
Metals Analysis															
Percent Dry Weight	X	X	X				X								
Total Cyanide															

Organic Test Assigned	Sample No. 980403-														
	31	32	33	34	35	36	37	38	39	40					
PCBs and Pesticides by Gas Chromatography															
Semivolatile Organics by GC/MS															
Volatile Organics by Purge and Trap GC/MS	X	X	X	X	X	X	X	X	X	X					

(X = test was requested)

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QUALIFIER CODE AND GLOSSARY DEFINITIONS

Qualifier Codes:

<	=	Sample value is below the quantitation limit. Quantitation limit reported.
</=	=	Reported value is estimated. Sample was analyzed in duplicate, one value is equal to or above the quantitation limit and one below. Average of quantitation limit and detected value reported.
>	=	Sample value is above the quantitation range.
A	=	Quality control value is outside acceptance limits.
B	=	Not detected substantially above (10 times) the level reported in the laboratory or field blanks (includes field, trip, rinsate, and equipment blanks).
C	=	See report narrative for analyst's observations concerning this result.
D	=	Sample and duplicate values are below the quantitation limit. Quantitation limit reported.
E	=	Value exceeds a theoretically greater value (e.g. dissolved > total, orthophosphate > total phosphorus). However, the difference is within the expected precision of the analytical techniques and is not statistically significant.
I	=	An interference exists which masks true response. See report narrative for explanation.
J	=	Analyte present. Reported value is estimated; concentration is outside the range for accurate quantitation.
K	=	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	=	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
N	=	Presumptive evidence indicates the presence of the compound. Special methods and/or method modifications may be needed to confirm its presence or absence in future sampling efforts.
NA	=	Analysis was not requested.
Q	=	No analytical results. See report for explanation.
R	=	Unreliable results. Analyte may or may not be present in the sample. Supporting data is necessary to confirm results.
T	=	Tentatively Identified Compound. Identified as a result of a library search using the EPA/NIH Mass Spectral Library. Authentic standards were not available to properly identify and quantitate the compound The reported concentration is an estimate.
TD	=	Spike recovery too dilute for accurate quantitation.
UJ	=	Not detected. Quantitation limit is estimated.
UL	=	Not detected. Quantitation limit is probably higher.

Glossary:

( )	=	Numbers in parentheses are analytical spike recoveries (e.g. post-digestion spikes).
[ ]	=	Numbers in brackets are matrix spike recoveries (e.g. pre-digestion spikes).
MS/MSD	=	Matrix spike/matrix spike duplicate; a known increment of target analyte made to a sample before preparation or analyses.
MSA	=	Method of Standard Additions
RPD	=	Relative Percent Difference; the results for duplicate analyses are presented as the mean and the relative percent difference.

$$RPD = \frac{|Replicate1 - Replicate2|}{(Replicate1 + Replicate2)/2} \times 100$$

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INORGANIC ANALYTICAL REPORT

RADFORD ARMY AMMUNITION PLANT

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INORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	98040126			98040127			98040128			98040130		
Station ID :	SS-08A			SL-08			SL-108			SL-10		
ANALYTES	SAMPLE			SAMPLE			FIELD DUPLICATE			SAMPLE		
Percent Dry Weight Units:	%	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD
Percent Dry Weight (105C)	73.8			73.3			71.8			73.0		

Sample Number:	98040131			98040132			98040201			98040202		
Station ID :	SL-110			SL-11			SS-08A			SL-08		
ANALYTES	FIELD DUPLICATE			SAMPLE			SAMPLE			SAMPLE		
Metals Analysis Units:							ug/g	% Rec	RPD	ug/g	% Rec	RPD
Aluminum							24800			21600		
Antimony							<6.0	(109)		<6.0		
Arsenic							8.9	(87)		9.2	(85)	
Barium							53.7			75.2		
Beryllium							1.4			1.1		
Cadmium							0.8			1.2		
Calcium							4720			8550		
Chromium							41.1			34.3		
Cobalt							32.1			18.4		
Copper							31.0			34.4		
Iron							48400			42600		
Lead							52.6			94.1		
Magnesium							2710			2430		
Manganese							233			249		
Mercury							0.2	[96]	10	0.1		
Nickel							21.1			17.2		
Potassium							985			1100		
Selenium							<0.5	(MSA)		<0.5	(MSA)	
Silver							<1.0			<1.0		
Sodium							<100			<100		
Thallium							0.4	(97)		<0.3	(103)	

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INORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	98040131			98040132			98040201			98040202		
Station ID :	SL-110			SL-11			SS-08A			SL-08		
ANALYTES (continued)	FIELD DUPLICATE			SAMPLE			SAMPLE			SAMPLE		
Metals Analysis	Units:						ug/g	% Rec	RPD	ug/g	% Rec	RPD
Vanadium							91.5			71.9		
Zinc							159			675		
Percent Dry Weight	Units: %	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD
Percent Dry Weight (105C)	72.5			38.4								
Percent Dry Weight (60C)							74.0			69.0		
Total Cyanide	Units:						mg/Kg	% Rec	RPD	mg/Kg	% Rec	RPD
Cyanide							<1.0	[103]	D	<1.0		

Sample Number:	98040203			98040204			98040205			98040206		
Station ID :	SL-108			SL-110			SL-10			SS-11A		
ANALYTES	FIELD DUPLICATE			FIELD DUPLICATE			SAMPLE			SAMPLE		
Metals Analysis	Units: ug/g	% Rec	RPD	ug/g	% Rec	RPD	ug/g	% Rec	RPD	ug/g	% Rec	RPD
Aluminum	32300			28500			23000			8060		
Antimony	<6.0			<6.0			<6.0			<6.0	(98)	
Arsenic	19.4	(MSA)		11.5	(MSA)		5.4	(91)		100	(MSA)	
Barium	234			52.5			58.4			11800		
Beryllium	1.3			0.8			0.7			0.5		
Cadmium	1.3			1.0			1.9			5.5		
Calcium	7090			8960			22900			62100		
Chromium	40.4			36.0			32.0			79.4		
Cobalt	21.4			9.8			9.8			66.5		
Copper	36.8			41.6			36.1			43900		
Iron	46500			35300			32800			28600		
Lead	102			54.2			72.8			918		
Magnesium	3040			4960			9760			52500		

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INORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	98040203			98040204			98040205			98040206		
Station ID :	SL-108			SL-110			SL-10			SS-11A		
ANALYTES (continued)	FIELD DUPLICATE			FIELD DUPLICATE			SAMPLE			SAMPLE		
Metals Analysis Units:	ug/g	% Rec	RPD	ug/g	% Rec	RPD	ug/g	% Rec	RPD	ug/g	% Rec	RPD
Manganese	281			82.1			102			465		
Mercury	0.1			<0.1			0.1			0.2		
Nickel	21.5			18.0			16.1			97.2		
Potassium	1650			2020			1820			733		
Selenium	0.6	(MSA)		<0.5	(MSA)		<0.5	(MSA)		<0.5	(93)	
Silver	<1.0			<1.0			<1.0			11.0		
Sodium	<100			<100			<100			<100		
Thallium	*0.5*	*(93)*		*<0.3*	*(103)*		*<0.3*	*(101)*		*0.5*	*(100)*	
Vanadium	77.3			63.2			58.2			23.8		
Zinc	758			591			1300			18300		
Percent Dry Weight Units:	%	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD
Percent Dry Weight (60C)	70.2			74.6			71.8			45.5		
Total Cyanide Units:	mg/Kg	% Rec	RPD	mg/Kg	% Rec	RPD	mg/Kg	% Rec	RPD	mg/Kg	% Rec	RPD
Cyanide	<1.0			<1.0			<1.0	(44)		<1.0		

Sample Number:	98040207			98040208			98040209			98040210		
Station ID :	SS-11B			SS-14			SD-08			SD-06		
ANALYTES	SAMPLE			SAMPLE			SAMPLE			SAMPLE		
Metals Analysis Units:	ug/g	% Rec	RPD	ug/g	% Rec	RPD	ug/g	% Rec	RPD	ug/g	% Rec	RPD
Aluminum	3900			35600			13100			21800	(98)	23
Antimony	<6.0	(103)		<6.0			<6.0			<6.0	(99)	D
Arsenic	56.4	(90)		4.7	(MSA)		2.9	(91)		4.6	(91)	20
Barium	4600			65.8			55.7			113	[94]	8
Beryllium	<0.3			1.6			0.9			1.2	[91]	8
Cadmium	3.2			<0.5			<0.5			<=0.5	[101]	

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INORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	98040207			98040208			98040209			98040210		
Station ID :	SS-11B			SS-14			SD-08			SD-06		
ANALYTES (continued)	SAMPLE			SAMPLE			SAMPLE			SAMPLE		
Metals Analysis Units:	ug/g	% Rec	RPD	ug/g	% Rec	RPD	ug/g	% Rec	RPD	ug/g	% Rec	RPD
Calcium	101000			1460			1220			26800	(98)	5
Chromium	79.1			44.0			27.2			39.2	[85]	6
Cobalt	42.1			22.5			16.1			19.1	[88]	1
Copper	53400			27.1			45.5			16.6	[92]	6
Iron	27500			40000			22400			31700	(104)	2
Lead	336			14.7			58.7			16.5	[96]	14
Magnesium	82200			6270			4400			10400	(100)	12
Manganese	300			573			815			1250	(95)	1
Mercury	<0.1			<0.1			<0.1			<0.1		
Nickel	124			23.8			16.6			20.4	[86]	12
Potassium	837			4200			1360			2870	(100)	31
Selenium	<0.5	(MSA)		<0.5	(MSA)		<0.5	(MSA)		<0.5	(MSA)	D
Silver	13.0			<1.0			<1.0			<1.0	[82]	D
Sodium	<100			<100			<100			<100	[116]	D
Thallium	0.3	(97)		<0.3	(100)		<0.3	(100)		<0.3	[103]	D
Vanadium	10.8			78.3			42.4			60.5	[90]	7
Zinc	8280			41.4			74.6			43.4	[90]	6
Percent Dry Weight Units:	%	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD
Percent Dry Weight (105C)				91.3			78.6			62.0		
Percent Dry Weight (60C)	70.0			89.8			78.4			69.4		4
Total Cyanide Units:	mg/Kg	% Rec	RPD	mg/Kg	% Rec	RPD	mg/Kg	% Rec	RPD	mg/Kg	% Rec	RPD
Cyanide	<1.0			<1.0			<1.0			<1.0	(102)	

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INORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	98040211			98040212			98040213			98040214		
Station ID :	SD-07			SL-11			SS-12			SW-07		
ANALYTES	SAMPLE			SAMPLE			SAMPLE			SAMPLE		
Metals Analysis Units:	ug/g	% Rec	RPD	ug/g	% Rec	RPD	ug/g	% Rec	RPD	ug/L	% Rec	RPD
Aluminum	19000	(94)	8	2820			4860			<200		
Antimony	<6.0	[82]	D	<6.0	(107)		<6.0			<60		
Arsenic	5.0	(103)	7	23.0	(MSA)		164	(112)		<3	(97)	
Barium	112	[93]	2	451			3220			<100		
Beryllium	1.2	[89]	3	<0.3			<0.3			<3		
Cadmium	<0.5	[90]	D	4.3			6.8			<5		
Calcium	95300	(100)	3	58700			87700			60300		
Chromium	49.3	[91]	7	172			99.2			<10		
Cobalt	15.8	[84]	0	23.3			85.6			<40		
Copper	32.1	[86]	1	733			56500			<20		
Iron	31200	(96)	1	184000			35100			165		
Lead	33.0	[83]	32	2220			563			<2	(107)	
Magnesium	7540	(99)	1	4590			71500			14800		
Manganese	960	[119]	3	1280			281			<10		
Mercury	<0.1	[107]	D	<0.1			<0.1			<0.2		
Nickel	16.7	[83]	2	67.1			173			<40		
Potassium	2280	(103)	12	456			814			2800		
Selenium	<0.6	[83]	D	<0.5	(MSA)		<0.5	(MSA)		<3	(91)	
Silver	<1.0	[80]	D	<1.0			22.5			<10		
Sodium	120	[100]	3	308			101			32400		
Thallium	<0.3	[94]	D	<0.3	(MSA)		0.7	(99)		<3	(103)	
Vanadium	56.6	[96]	4	<40.0			16.3			<50		
Zinc	47.3	[92]	1	2240			6460			<20		
Percent Dry Weight Units:	%	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD			
Percent Dry Weight (105C)	68.2											
Percent Dry Weight (60C)	59.0			31.0			60.6					

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INORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	98040211			98040212			98040213			98040214		
Station ID :	SD-07			SL-11			SS-12			SW-07		
ANALYTES (continued)	SAMPLE			SAMPLE			SAMPLE			SAMPLE		
Total Cyanide Units:	mg/Kg	% Rec	RPD	mg/Kg	% Rec	RPD	mg/Kg	% Rec	RPD	mg/L	% Rec	RPD
Cyanide	<1.0	[104]	D	<1.0			<1.0			<0.02		

Sample Number:	98040215			98040216			98040217			98040218		
Station ID :	WW-106			WW-06			WW-04			FB-01		
ANALYTES	FIELD DUPLICATE			SAMPLE			SAMPLE			FIELD BLANK		
Metals Analysis Units:	ug/L	% Rec	RPD	ug/L	% Rec	RPD	ug/L	% Rec	RPD	ug/L	% Rec	RPD
Aluminum	<200			<200	[103]	D	258			<200		
Antimony	<60			<60	[105]	D	<60			<60		
Arsenic	<3	(96)		<3	[93]	D	<3	(103)		<3		
Barium	<100			<100	[98]	D	<100			<100		
Beryllium	<3			<3	[98]	D	<3			<3		
Cadmium	<5			<5	[97]	D	<5			<5		
Calcium	40100			41400	(96)	7	26600			<500		
Chromium	<10			<10	[98]	D	<10			<10		
Cobalt	<40			<40	[96]	D	<40			<40		
Copper	83			102	[95]	2	38			<20		
Iron	1010			1280	[94]	3	4470			<100		
Lead	27	(93)		17	[102]	1	31	(92)		<2		
Magnesium	12500			12800	[81]	9	6530			<500		
Manganese	44			50	[95]	2	102			<10		
Mercury	<0.2			<0.2	[94]	D	<0.2			<0.2		
Nickel	<40			<40	[95]	D	<40			<40		
Potassium	9900			10300	[87]	4	2780			<1000		
Selenium	<3	(94)		<3	[87]	D	<3	(95)		<3		
Silver	<10			<10	[83]	D	<10			<10		
Sodium	5780			5810	[95]	6	1660			<1000		
Thallium	<3	(98)		<3	[110]	D	<3	(102)		<3		

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INORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	98040215			98040216			98040217			98040218		
Station ID :	WW-106			WW-06			WW-04			FB-01		
ANALYTES (continued)	FIELD DUPLICATE			SAMPLE			SAMPLE			FIELD BLANK		
Metals Analysis Units:	ug/L	% Rec	RPD	ug/L	% Rec	RPD	ug/L	% Rec	RPD	ug/L	% Rec	RPD
Vanadium	<50			<50	[96]	D	<50			<50		
Zinc	125			147	[95]	2	274			<20		
Total Cyanide Units:	mg/L	% Rec	RPD	mg/L	% Rec	RPD	mg/L	% Rec	RPD	mg/L	% Rec	RPD
Cyanide	<0.02			<=0.03	[109]		<0.02	(158)		0.04		

Sample Number:	98040219			98040220			98040221			98040222		
Station ID :	RB-01			WS-03			WS-04			WS-05		
ANALYTES	RINSATE			SAMPLE			SAMPLE			SAMPLE		
Metals Analysis Units:	ug/L	% Rec	RPD	ug/g	% Rec	RPD	ug/g	% Rec	RPD	ug/g	% Rec	RPD
Aluminum	<200			2680			1190			683		
Antimony	<60			<6.0			<6.0			<6.0		
Arsenic	<3			204	(102)		7.8	(110)		4.1	(107)	
Barium	<100			2080			172			54.1		
Beryllium	<3			<0.3			<0.3			0.4		
Cadmium	<5			2.8			2.1			6.6		
Calcium	<500			126000			107000			70700		
Chromium	<10			69.3			92.3			67.9		
Cobalt	<40			57.8			12.0			10.2		
Copper	<20			54200			86100			65500		
Iron	<100			30600			32000			24600		
Lead	<2			308			214			255		
Magnesium	<500			100000			122000			140000		
Manganese	<10			201			139			111		
Mercury	<0.2			0.1			<0.1			<0.1		
Nickel	<40			147			213			147		
Potassium	<1000			778			633			312		

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Sample Number:	98040219			98040220			98040221			98040222		
Station ID :	RB-01			WS-03			WS-04			WS-05		
ANALYTES (continued)	RINSATE			SAMPLE			SAMPLE			SAMPLE		
Metals Analysis Units:	ug/L	% Rec	RPD	ug/g	% Rec	RPD	ug/g	% Rec	RPD	ug/g	% Rec	RPD
Selenium	<3			<0.5	(MSA)		<0.5	(MSA)		<0.5	(MSA)	
Silver	<10			15.9			4.7			5.0		
Sodium	<1000			128			109			<100		
Thallium	<3			0.4	(98)		<0.3	(89)		<0.3	(88)	
Vanadium	<50			<10.0			<10.0			<5.0		
Zinc	<20			3370			441			187		
Percent Dry Weight Units:				%	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD
Percent Dry Weight (60C)				98.2			98.5			99.2		
Total Cyanide Units:	mg/L	% Rec	RPD	mg/Kg	% Rec	RPD	mg/Kg	% Rec	RPD	mg/Kg	% Rec	RPD
Cyanide	0.02			<1.0			<1.0	(104)		<1.0		

Sample Number:	98040301			98040302			98040303			98040304		
Station ID :	TR-05D			TR-05B			TR-05A			TR-09B		
ANALYTES	SAMPLE			SAMPLE			SAMPLE			SAMPLE		
Percent Dry Weight Units:	%	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD
Percent Dry Weight (105C)	75.3			74.0			70.4			62.5		

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INORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	98040305			98040306			98040307			98040308		
Station ID :	TR-04F			TR-04FD			TR-04A			TR-07C		
ANALYTES	SAMPLE			FIELD DUPLICATE			SAMPLE			SAMPLE		
Percent Dry Weight Units:	%	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD
Percent Dry Weight (105C)	73.7			73.8		1	69.0			78.1		

Sample Number:	98040309			98040310			98040311			98040312		
Station ID :	TR-07A			TR-03E			TR-02C			TR-02A		
ANALYTES	SAMPLE			SAMPLE			SAMPLE			SAMPLE		
Percent Dry Weight Units:	%	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD
Percent Dry Weight (105C)	64.7			72.4			78.7			85.1		

Sample Number:	98040313	98040314	98040315	98040316		
Station ID :	TR-01B	TR-01A	TR-04E	SD-03		
ANALYTES	SAMPLE	SAMPLE	SAMPLE	SAMPLE		
Metals Analysis Units:				ug/g	% Rec	RPD
Aluminum				9370		
Antimony				<6.0		
Arsenic				4.9	(94)	
Barium				81.7		
Beryllium				0.6		
Cadmium				<0.5		
Calcium				176000		
Chromium				24.6		
Cobalt				5.9		
Copper				47.6		
Iron				12500		
Lead				10.9		
Magnesium				3600		

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INORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	98040313	98040314	98040315	98040316
Station ID :	TR-01B	TR-01A	TR-04E	SD-03
ANALYTES (continued)	SAMPLE	SAMPLE	SAMPLE	SAMPLE

Metals Analysis	Units:									ug/g	% Rec	RPD
Manganese										446		
Mercury										<0.1		
Nickel										6.7		
Potassium										553		
Selenium										<0.5	(92)	
Silver										<1.0		
Sodium										<100		
Thallium										<0.3	(88)	
Vanadium										26.1		
Zinc										16.2		
Percent Dry Weight	Units: %	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD
Percent Dry Weight (105C)	82.0			79.0			71.8			77.4		8
Percent Dry Weight (60C)										68.4		
Total Cyanide	Units:									mg/Kg	% Rec	RPD
Cyanide										<1.0		

Sample Number:	98040317	98040318	98040320	98040321
Station ID :	SD-04	SD-05	SS-21	SS-20
ANALYTES	SAMPLE	SAMPLE	SAMPLE	SAMPLE

Metals Analysis	Units: ug/g	% Rec	RPD	ug/g	% Rec	RPD	ug/g	% Rec	RPD	ug/g	% Rec	RPD
Aluminum	11000			27000			17400			10100	(104)	9
Antimony	<6.0			<6.0			<6.0			<6.0	(99)	D
Arsenic	4.6	(85)		2.2	(96)		6.4	(MSA)		3.5	[96]	29
Barium	113			52.4			70.6			84.2	[95]	35
Beryllium	0.8			1.3			1.0			0.5	[90]	4

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INORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	98040317			98040318			98040320			98040321		
Station ID :	SD-04			SD-05			SS-21			SS-20		
ANALYTES (continued)	SAMPLE			SAMPLE			SAMPLE			SAMPLE		
Metals Analysis Units:	ug/g	% Rec	RPD	ug/g	% Rec	RPD	ug/g	% Rec	RPD	ug/g	% Rec	RPD
Cadmium	<0.5			<0.5			1.3			<=0.5	[100]	
Calcium	129000			3200			14700			41400	(96)	2
Chromium	21.2			32.9			31.9			21.3	[104]	7
Cobalt	6.6			11.8			19.8			9.4	[88]	1
Copper	21.9			20.9			34.1			44.2	[105]	1
Iron	14200			22000			34400			21300	(94)	7
Lead	11.2			28.4			289			92.2	[92]	13
Magnesium	2840			3590			9700			23400	(107)	2
Manganese	1220			90.9			775			196	[97]	0
Mercury	<0.1			<0.1			<0.1			<0.1	[99]	D
Nickel	9.0			19.7			17.0			12.6	[82]	39
Potassium	666			1870			1330			1040	(102)	4
Selenium	<0.5	(MSA)		1.7	(MSA)		<0.5	(MSA)		<0.5	[95]	D
Silver	<1.0			<1.0			<1.0			<1.0	(94)	D
Sodium	110			<100			<100			<100	[111]	D
Thallium	<0.3	(89)		<0.3	(107)		<0.3	(104)		<0.3	(89)	D
Vanadium	20.8			50.7			60.4			37.6	[98]	4
Zinc	27.8			93.6			319			118	[107]	4
Percent Dry Weight Units:	%	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD	%	% Rec	RPD
Percent Dry Weight (105C)	69.1			69.7			77.9			86.7		
Percent Dry Weight (60C)	61.1			69.2			76.0		2	79.4		1
Total Cyanide Units:	mg/Kg	% Rec	RPD	mg/Kg	% Rec	RPD	mg/Kg	% Rec	RPD	mg/Kg	% Rec	RPD
Cyanide	<1.0			<1.0			<1.0	(102)		<1.0	[109]	D

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INORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	98040322			98040323			98040325			98040326		
Station ID :	RB-02			FB-02			SD-06			SD-08		
ANALYTES	RINSATE			FIELD BLANK			SAMPLE			SAMPLE		
Metals Analysis Units:	ug/L	% Rec	RPD	ug/L	% Rec	RPD						
Aluminum	<200			<200								
Antimony	<60			<60								
Arsenic	<3			<3								
Barium	<100			<100								
Beryllium	<3			<3								
Cadmium	<5			<5								
Calcium	<500			<500								
Chromium	<10			<10								
Cobalt	<40			<40								
Copper	<20			<20								
Iron	<100			<100								
Lead	<2			<2								
Magnesium	<500			<500								
Manganese	<10			<10								
Mercury	<0.2			<0.2								
Nickel	<40			<40								
Potassium	<1000			<1000								
Selenium	<3			<3								
Silver	<10			<10								
Sodium	<1000			<1000								
Thallium	<3			<3								
Vanadium	<50			<50								
Zinc	<20			<20								
Percent Dry Weight Units:							%	% Rec	RPD	%	% Rec	RPD
Percent Dry Weight (105C)							66.0			78.8		

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Sample Number:	98040322			98040323			98040325			98040326		
Station ID :	RB-02			FB-02			SD-06			SD-08		
ANALYTES (continued)	RINSATE			FIELD BLANK			SAMPLE			SAMPLE		
Total Cyanide Units:	**mg/L**	**% Rec**	**RPD**	**mg/L**	**% Rec**	**RPD**						
Cyanide	0.02			0.03								

Sample Number:	98040327			98040328			98040329			98040330		
Station ID :	SS-14			SD-07			SS-08A			SL-08		
ANALYTES	SAMPLE			SAMPLE			SAMPLE			SAMPLE		
Percent Dry Weight Units:	**%**	**% Rec**	**RPD**	**%**	**% Rec**	**RPD**	**%**	**% Rec**	**RPD**	**%**	**% Rec**	**RPD**
Percent Dry Weight (105C)	88.5			54.4			73.5			74.6		1

Sample Number:	98040331			98040332			98040333			98040337		
Station ID :	SL-108			SL-110			SL-10			SL-11		
ANALYTES	FIELD DUPLICATE			FIELD DUPLICATE			SAMPLE			SAMPLE		
Percent Dry Weight Units:	**%**	**% Rec**	**RPD**	**%**	**% Rec**	**RPD**	**%**	**% Rec**	**RPD**	**%**	**% Rec**	**RPD**
Percent Dry Weight (105C)	74.0			73.3			75.7			24.3		8

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Percent Dry Weight Determinations

Analyst:

Douglas Gardner
LESAT Chemist

Method:

The soil/solid samples from the RADFORD ARMY AMMUNITION PLANT (REQ98118) were analyzed for Percent Dry Weight as required by EPA analytical methods. The samples were dried at 105°C following the procedure outlined in the Region III OASQA laboratory SOP# R3QA056.0.

These results are to be used to convert analyte concentrations to a dry weight basis for organic and non-metal analyses. Normally, analytical values are reported on a wet weight basis for organics and non-metals. All of the metals that are reported use a 60°C drying temperature for the percent dry weight determinations, as required by the methodology. The 60°C percent dry weight values are reported with the metals results, if applicable.

ORIGINAL (Red)

Metals Determinations

Analysts:

R. Fisher
LMES Chemist

M.J. Chang
LMES Chemist

Methods:

Samples from RADFORD ARMY AMMUNITION PLANT (REQ98118) were prepared for analysis by acid digestion and analyzed by graphite furnace atomic absorption spectroscopy (GFAAS) and inductively coupled plasma-atomic emission spectrometry (ICP-AES). The results are presented in the attached table. The following are the digestion and analytical techniques and methods employed:

Digestion Methods
Method from CLP SOW 9/91 revision, p. D-5, A.1. for GFAAS (excluding antimony)
Method from CLP SOW 9/91 revision, p. D-5, A.2. for ICP-AES, and antimony by GFAAS

EPA Method 3050A, excluding HCl for GFAAS (excluding antimony) (solid samples) (2)
EPA Method 3050A, for ICP-AES and antimony by GFAAS (solid samples) (2)

Analytical Methods
EPA Method 204.2 and Internal SOP R3-QA132, antimony by GFAAS (1)
EPA Method 206.2 and Internal SOP R3-QA132, arsenic by GFAAS (1)
EPA Method 239.2 and Internal SOP R3-QA132, lead by GFAAS (1)
EPA Method 270.2 and Internal SOP R3-QA132, selenium by GFAAS (1)
EPA Method 279.2 and Internal SOP R3-QA132, thallium by GFAAS (1)
EPA Method 200.7 and Internal SOP R3-QA132, remaining elements by ICP-AES (1)

(1) EPA Manual of Methods for Chemical Analysis of Water and Wastes, 1979/83.
(2) SW-846, Test Methods for Evaluating Solid Waste Physical/Chemical Methods, Volume IA, Final Update I, July 1992.

Results for solid samples are reported in ug/g (ppm) **DRY** weight at 60 degrees centigrade. This, Percent Dry Weight test, pertains only to metals results. The drying temperature of 60 degrees centigrade is selected to retain volatile elements. The % Dry Weight (60 C) is reported to allow for conversion to wet weight.

ORIGINAL
(Red)

NOTE: The detection limit of vanadium for samples 980402-12, 980402-20 and 980402-21 has been raised due to matrix interferences.

The detection limit of selenium for sample 980402-11 has been raised due to matrix interferences.

ORIGINAL (Red)

Mercury Determinations

Analyst:

Odis Cain
LMES Chemist

METHOD:

Samples from RADFORD ARMY AMMUNITION PLANT (REQ98118) were analyzed for total mercury using EPA Methods 245.1[1] and 245.5[1]:

Results for solid samples are reported in ug/g **Dry** weight at 60 degrees centigrade. This Percent Dry Weight test pertains only to metals results. The drying temperature of 60 degrees centigrade is selected to retain volatile elements. The Percent Dry Weight (60 degrees C) is reported to allow for conversion to wet weight.

[1]Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020.

ORIGINAL (Red)

Total Cyanide Determinations

Analyst:

Odis W. Cain
LMES CHEMIST

METHOD:

Samples from RADFORD ARMY AMMUNITION PLANT (REQ98118) were analyzed for Total Cyanide determination using EPA Method 335.4.

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ORGANIC ANALYTICAL REPORT

RADFORD ARMY AMMUNITION PLANT

SUPERFUND F/F

Lab Request # REQ98118

ORIGINAL
(Red)

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Facility: RADFORD ARMY AMMUNITION PLANT
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Lab Request #: REQ98118

ORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	98040126	98040127	98040128	98040129	98040130	98040131	98040132	98040133
Station ID :	SS-08A	SL-08	SL-108	WW-04	SL-10	SL-110	SL-11	WW-106
	SAMPLE	SAMPLE	FIELD DUP	SAMPLE	SAMPLE	FIELD DUP	SAMPLE	FIELD DUP
ANALYTES								
Percent Dry Weight	%	%	%		%	%	%	
Percent Dry Weight (105C)	73.8	73.3	71.8		73.0	72.5	38.4	
NQL Factor:	1	1	1	1.18	1	1	1	1.23
PCBs and Pesticides by Gas Chromatography Units:	mg/Kg	mg/Kg	mg/Kg	ug/L	mg/Kg	mg/Kg	mg/Kg	ug/L
Alpha Chlordane	0.012 I							
Aroclor 1254	0.74	0.16	0.045		0.050	0.042	0.90	
Beta BHC							0.12 R	
4,4'-DDE	0.010 I							
Dieldrin	0.0041 R,I							
Endosulfan-II	0.041 R,I							
Endrin	0.0056 R,I							
Heptachlor Epoxide	0.0032 R,I							
NQL Factor:	1	1	1	1.19	1	1	1	1.3
Semivolatile Organics by GC/MS Units:	mg/Kg	mg/Kg	mg/Kg	ug/L	mg/Kg	mg/Kg	mg/Kg	ug/L
Acenaphthylene							0.1 J	
Anthracene							0.1 J	
Benzo(a)Anthracene							0.53	
Benzo(a)Pyrene							0.48	
Benzo(B)Fluoranthene							0.57	
Benzo(g,h,i)Perylene							0.1 J	
Benzo(k)Fluoranthene							0.46	
Benzoic Acid							0.08 J	
Bis(2-Ethylhexyl)Phthalate					0.2 J	0.1 J	0.2 J	
Carbazole							0.06 J	
Chrysene							0.51	
Dibenzo(a,h)Anthracene							0.08 J	
3,3'-Dichlorobenzidine	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ
2,4-Dinitrophenol	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ
Fluoranthene		0.05 J	0.04 J				1.13	

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ORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:		98040126	98040127	98040128	98040129	98040130	98040131	98040132	98040133
Station ID :		SS-08A	SL-08	SL-108	WW-04	SL-10	SL-110	SL-11	WW-106
		SAMPLE	SAMPLE	FIELD DUP	SAMPLE	SAMPLE	FIELD DUP	SAMPLE	FIELD DUP
ANALYTES (continued)									
NQL Factor:		1	1	1	1.19	1	1	1	1.3
Semivolatile Organics by GC/MS	Units:	mg/Kg	mg/Kg	mg/Kg	ug/L	mg/Kg	mg/Kg	mg/Kg	ug/L
Phenanthrene								0.36	
Pyrene			0.03 J	0.03 J				0.67	

Sample Number:		98040134	98040135	98040136	98040208	98040209	98040210	98040211	98040214
Station ID :		WW-06	FB-01	RB-01	SS-14	SD-08	SD-06	SD-07	SW-07
		SAMPLE	FIELD BLANK	RINSATE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE
ANALYTES									
Percent Dry Weight					%	%	%	%	
Percent Dry Weight (105C)					91.3	78.6	62.0	68.2	
NQL Factor:		1	1.25	1.25	1	1	1	1	1.56
PCBs and Pesticides by Gas Chromatography	Units:	ug/L	ug/L	ug/L	mg/Kg	mg/Kg	mg/Kg	mg/Kg	ug/L
NQL Factor:		1	1.27	1.33	1	1	1	1	1
Semivolatile Organics by GC/MS	Units:	ug/L	ug/L	ug/L	mg/Kg	mg/Kg	mg/Kg	mg/Kg	ug/L
Acenaphthene						0.2 J			
Anthracene						0.3 J			
Benzo(a)Anthracene						0.80			
Benzo(a)Pyrene						0.77			
Benzo(B)Fluoranthene						1.07			
Benzo(g,h,i)Perylene						0.2 J			
Benzo(k)Fluoranthene						0.75			
Bis(2-Ethylhexyl)Phthalate					0.05 J			0.05 J	
Carbazole						0.3 J		UJ	
Chrysene						1.04			
Dibenzo(a,h)Anthracene						0.1 J			
Dibenzofuran						0.09 J			
3,3'-Dichlorobenzidine		UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ

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ORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	98040134	98040135	98040136	98040208	98040209	98040210	98040211	98040214
Station ID :	WW-06	FB-01	RB-01	SS-14	SD-08	SD-06	SD-07	SW-07
	SAMPLE	FIELD BLANK	RINSATE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE
ANALYTES (continued)								
NQL Factor:	1	1.27	1.33	1	1	1	1	1
Semivolatile Organics by GC/MS Units:	ug/L	ug/L	ug/L	mg/Kg	mg/Kg	mg/Kg	mg/Kg	ug/L
Fluoranthene					2.74			
Fluorene					0.2 J			
Indeno(1,2,3-cd)Pyrene					0.33			
3-Nitroaniline							UJ	
Phenanthrene					2.11			
Phenol				0.07 J				
Pyrene					1.75			

Sample Number:	98040301	98040302	98040303	98040304	98040305	98040306	98040307	98040308
Station ID :	TR-05D	TR-05B	TR-05A	TR-09B	TR-04F	TR-04FD	TR-04A	TR-07C
	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	FIELD DUP	SAMPLE	SAMPLE
ANALYTES								
Percent Dry Weight	%	%	%	%	%	%	%	%
Percent Dry Weight (105C)	75.3	74.0	70.4	62.5	73.7	73.8	69.0	78.1
NQL Factor:	1	2	1	5	2	1	2	1
PCBs and Pesticides by Gas Chromatography Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Alpha Chlordane		0.068 I					0.19 R,I	
Aroclor 1254	1.1	5.2	0.32		0.15	0.12	17	
Aroclor 1260	0.14		0.34			0.044		0.28
Endosulfan-II		0.26 I			0.033 R,I	0.033 R,I	1.0 R,I	
Endrin	0.052 R,I					0.018 R,I	0.21 R,I	
Heptachlor Epoxide							0.096 R,I	

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ORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:		98040301	98040302	98040303	98040304	98040305	98040306	98040307	98040308
Station ID :		TR-05D	TR-05B	TR-05A	TR-09B	TR-04F	TR-04FD	TR-04A	TR-07C
		SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	FIELD DUP	SAMPLE	SAMPLE
ANALYTES (continued)									
NQL Factor:		1	1	1	5	1	1	1	1
Semivolatile Organics by GC/MS	*Units:*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*	*mg/Kg*
Acenaphthene									0.1 J
Acenaphthylene			0.08 J				0.04 J	0.07 J	
Anthracene			0.2 J			0.04 J	0.1 J	0.1 J	
Benzo(a)Anthracene			0.3 J			0.1 J	0.2 J	0.1 J	
Benzo(a)Pyrene		0.04 J	0.2 J	0.05 J	0.4 J	0.09 J	0.2 J	0.2 J	0.3 J
Benzo(B)Fluoranthene		0.07 J	0.85	0.07 J	0.5 J	0.3 J	0.64	0.38	1.14
Benzo(g,h,i)Perylene			0.1 J					0.04 J	
Benzo(k)Fluoranthene		0.05 J	0.48	0.05 J	0.4 J	0.2 J	0.34	0.3 J	
Benzoic Acid		0.2 J	0.3 J	0.51	7.49	0.43	1.00	0.60	1.25
Bis(2-Ethylhexyl)Phthalate		0.2 J	0.38	0.39	0.6 J	0.55	0.70	0.68	0.90
Carbazole		UJ	0.4 J	UJ		0.03 J	0.06 J	0.1 J	UJ
Chrysene		0.08 J	1.01	0.08 J	0.5 J	0.2 J	0.41	0.39	1.07
Dibenzo(a,h)Anthracene			0.05 J				0.04 J		
Dibenzofuran									0.2 J
3,3'-Dichlorobenzidine		UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ
2,4-Dinitrophenol		UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ
Fluoranthene		0.2 J	2.15	0.09 J	0.3 J	0.3 J	0.79	0.53	3.25
Indeno(1,2,3-cd)Pyrene			0.1 J		0.1 J	0.04 J	0.07 J	0.05 J	0.1 J
2-Methylnaphthalene									0.05 J
Naphthalene									0.08 J
3-Nitroaniline		UJ	UJ	UJ		UJ	UJ	UJ	UJ
Pentachlorophenol			0.3 J		79.3 C			2.14	
Phenanthrene		0.1 J	0.67	0.04 J			0.03 J	0.1 J	2.68
Pyrene		0.1 J	1.38	0.07 J	0.4 J	0.2 J	0.57	0.37	2.43

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ORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	98040309	98040310	98040311	98040312	98040313	98040314	98040315	98040316
Station ID :	TR-07A	TR-03E	TR-02C	TR-02A	TR-01B	TR-01A	TR-04E	SD-03
	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE
ANALYTES								
Percent Dry Weight	%	%	%	%	%	%	%	%
Percent Dry Weight (105C)	64.7	72.4	78.7	85.1	82.0	79.0	71.8	77.4
NQL Factor:	2	2	5	2	1	1	1	1
PCBs and Pesticides by Gas Chromatography Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Alpha Chlordane	0.037 I		0.11 R				0.69 I	
Aroclor 1254	2.8	0.078					54	
Aroclor 1260							13	
4,4'-DDD			0.24 R				0.29 R,I	
4,4'-DDE	0.072 R,I			0.034				
4,4'-DDT			0.19 J,R			0.030 R	0.41 R,I	
Delta BHC			0.13 R					
Dieldrin			0.21				0.45 I	
Endosulfan-I			0.11 R					
Endosulfan-II	0.25 I						2.5 R,I	
Endrin	0.034 R,I					0.019	0.66 R,I	
Endrin Aldehyde						0.018 R	0.28 R,I	
Heptachlor			0.16 R					
Heptachlor Epoxide							0.15 R,I	
Methoxychlor						0.10 R		
NQL Factor:	1	1	20	1	1	1	1	1
Semivolatile Organics by GC/MS Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Acenaphthene	0.03 J							
Acenaphthylene				0.06 J		0.2 J		
Anthracene	0.07 J			0.1 J		0.80		
Benzo(a)Anthracene	0.3 J	0.05 J		0.3 J		2.80		
Benzo(a)Pyrene	0.2 J	0.05 J		0.3 J	0.03 J	4.14 C		
Benzo(B)Fluoranthene	0.49	0.09 J		0.86	0.07 J	9.95 C		
Benzo(g,h,i)Perylene	0.1 J			0.06 J		4.14 C		
Benzo(k)Fluoranthene	0.47	0.06 J		0.48	0.04 J	5.14 C		

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ORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	98040309	98040310	98040311	98040312	98040313	98040314	98040315	98040316
Station ID :	TR-07A	TR-03E	TR-02C	TR-02A	TR-01B	TR-01A	TR-04E	SD-03
	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE
ANALYTES (continued)								
NQL Factor:	1	1	20	1	1	1	1	1
Semivolatile Organics by GC/MS Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Bis(2-Ethylhexyl)Phthalate	0.65	0.1 J		0.09 J	0.2 J	0.3 J	0.48	
Carbazole	0.2 J	UJ		0.1 J		0.4 J	UJ	
Chrysene	0.92	0.08 J		0.56	0.05 J	6.04 C		
Di-n-Butylphthalate	0.1 J							
Dibenzo(a,h)Anthracene				0.04 J		0.74		
Dibenzofuran	0.05 J							
3,3'-Dichlorobenzidine	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ
2,4-Dinitrophenol	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ
Fluoranthene	1.63	0.1 J		0.33		3.47 C		
Fluorene	0.04 J							
Indeno(1,2,3-cd)Pyrene	0.1 J			0.09 J		4.79 C		
Naphthalene	0.04 J							
3-Nitroaniline		UJ		UJ		UJ	UJ	
Pentachlorophenol			650 C	0.09 J				
Phenanthrene	0.99	0.07 J		0.05 J		0.2 J		
Pyrene	1.46	0.1 J		0.73		3.83 C		
NQL Factor:								1
Volatile Organics by Purge and Trap GC/MS Units:								ug/Kg
Acetone								2 J
Methylene Chloride								2 B

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ORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	98040317	98040318	98040319	98040320	98040321	98040322	98040323	98040324
Station ID :	SD-04	SD-05	TB-02	SS-21	SS-20	RB-02	FB-02	SW-07
	SAMPLE	SAMPLE	TRIP BLANK	SAMPLE	SAMPLE	RINSATE	FIELD BLANK	SAMPLE
ANALYTES								
Percent Dry Weight	%	%		%	%			
Percent Dry Weight (105C)	69.1	69.7		77.9	86.7			
NQL Factor:	1	1		2	2	1.52	1.69	
PCBs and Pesticides by Gas Chromatography Units:	mg/Kg	mg/Kg		mg/Kg	mg/Kg	ug/L	ug/L	
Alpha Chlordane				0.13 R				
Beta BHC	0.028 R							
Delta BHC	0.015 R							
Dieldrin	0.033 R							
Endosulfan-I	0.0084 R							
Endrin Aldehyde	0.025							
Gamma BHC (Lindane)	0.011 R							
Gamma Chlordane				0.099				
NQL Factor:	1	1		1	1	1	1	
Semivolatile Organics by GC/MS Units:	mg/Kg	mg/Kg		mg/Kg	mg/Kg	ug/L	ug/L	
Benzo(a)Anthracene					0.06 J			
Benzo(a)Pyrene					0.08 J			
Benzo(B)Fluoranthene					0.1 J			
Benzo(g,h,i)Perylene					0.03 J			
Benzo(k)Fluoranthene					0.08 J			
Bis(2-Ethylhexyl)Phthalate		0.1 J		0.2 J	0.1 J			
Chrysene				0.07 J	0.1 J			
Di-n-Butylphthalate					0.45			
3,3'-Dichlorobenzidine	UJ	UJ		UJ	UJ	UJ	UJ	
2,4-Dinitrophenol	UJ	UJ		UJ	UJ	UJ	UJ	
Fluoranthene	0.04 J			0.1 J	0.2 J			
Indeno(1,2,3-cd)Pyrene					0.04 J			
Phenanthrene				0.05 J	0.1 J			
Pyrene				0.1 J	0.1 J			

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ORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	98040317	98040318	98040319	98040320	98040321	98040322	98040323	98040324
Station ID :	SD-04	SD-05	TB-02	SS-21	SS-20	RB-02	FB-02	SW-07
	SAMPLE	SAMPLE	TRIP BLANK	SAMPLE	SAMPLE	RINSATE	FIELD BLANK	SAMPLE
ANALYTES (continued)								
NQL Factor:	1	1	1	1	1	1	1	1
Volatile Organics by Purge and Trap GC/MS Units:	ug/Kg	ug/Kg	ug/L	ug/Kg	ug/Kg	ug/L	ug/L	ug/L
Acetone	32.8			7.6				
2-Butanone	7.4							
2-Chloroethylvinyl Ether			UJ			UJ	UJ	UJ
Dichlorodifluoromethane			UJ			UJ	UJ	UJ
Methylene Chloride	1 B	2 B		2 B	1 B			

Sample Number:	98040325	98040326	98040327	98040328	98040329	98040330	98040331	98040332
Station ID :	SD-06	SD-08	SS-14	SD-07	SS-08A	SL-08	SL-108	SL-110
	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	FIELD DUP	FIELD DUP
ANALYTES								
Percent Dry Weight	%	%	%	%	%	%	%	%
Percent Dry Weight (105C)	66.0	78.8	88.5	54.4	73.5	74.6	74.0	73.3
NQL Factor:	1	1	1	1	1	1	1	1
Volatile Organics by Purge and Trap GC/MS Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acetone								
Methylene Chloride	1 B	1 B	2 B	1 B	2 B	2 B	2 B	2 B

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ORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	98040333	98040334	98040335	98040336	98040337	98040338	98040339	98040340
Station ID :	SL-10	WW-04	WW-106	WW-06	SL-11	TB-01	RB-01	FB-01
	SAMPLE	SAMPLE	FIELD DUP	SAMPLE	SAMPLE	TRIP BLANK	RINSATE	FIELD BLANK
ANALYTES								
Percent Dry Weight	%				%			
Percent Dry Weight (105C)	75.7				24.3			
NQL Factor:	1	1	1	1	1	1	1	1
Volatile Organics by Purge and Trap GC/MS Units:	ug/Kg	ug/L	ug/L	ug/L	ug/Kg	ug/L	ug/L	ug/L
Acetone	24.4		4 J		57.6			
2-Butanone	5.7				14.9			
Sec-Butylbenzene					4 J			
Carbon Disulfide					2 J			
2-Chloroethylvinyl Ether		UJ	UJ	UJ		UJ	UJ	UJ
1,2-Dibromo-3-Chloropropane	UJ				UJ			
Dichlorodifluoromethane		UJ	UJ	UJ		UJ	UJ	UJ
Ethyl Benzene					5.9			
Isopropylbenzene					4 J			
P-Isopropyltoluene	3 J							
Methylene Chloride	2 B	0.6 B			2 B			
N-Propylbenzene					5.5			
1,2,4-Trimethylbenzene					5.4			

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Program: SUPERFUND F/F

Lab Request #: REQ98118

ORGANIC QUALITY CONTROL (SURROGATE RECOVERIES)

Matrix: SOLIDS

SURROGATES	Surrogate Limits	98040126 SS-08A SAMPLE	98040127 SL-08 SAMPLE	98040128 SL-108 FIELD DUP	98040130 SL-10 SAMPLE	98040131 SL-110 FIELD DUP	98040132 SL-11 SAMPLE	98040208 SS-14 SAMPLE	98040209 SD-08 SAMPLE	98040210 SD-06 SAMPLE
PCBs and Pesticides by Gas Chromatography	**Range**	%	%	%	%	%	%	%	%	%
Decachlorobiphenyl	(60-150)	115	100	102	121	122	123	111	115	121
Tetrachloro-M-Xylene	(60-150)	105	103	103	119	117	120	101	110	102
Semivolatile Organics by GC/MS	**Range**	%	%	%	%	%	%	%	%	%
2-Fluoro-1,1'-Biphenyl	(30-115)	55	72	61	42	42	38	67	45	44
2-Fluorophenol	(25-121)	56	67	58	41	41	38	56	41	50
d5-Nitrobenzene	(23-120)	49	69	56	39	40	37	59	41	49
d5-Phenol	(24-113)	66	66	67	44	44	38	67	47	58
d14-Terphenyl	(18-137)	67	79	60	36	37	31	67	42	49
2,4,6-Tribromophenol	(19-122)	33	69	64	34	39	36	50	34	44

Matrix: SOLIDS

SURROGATES	Surrogate Limits	98040211 SD-07 SAMPLE	98040301 TR-05D SAMPLE	98040302 TR-05B SAMPLE	98040303 TR-05A SAMPLE	98040304 TR-09B SAMPLE	98040305 TR-04F SAMPLE	98040306 TR-04FD FIELD DUP	98040307 TR-04A SAMPLE	98040308 TR-07C SAMPLE
PCBs and Pesticides by Gas Chromatography	**Range**	%	%	%	%	%	%	%	%	%
Decachlorobiphenyl	(60-150)	100	128	100	100	112	113	99	120	112
Tetrachloro-M-Xylene	(60-150)	95	126	101	91	116	111	103	117	106
Semivolatile Organics by GC/MS	**Range**	%	%	%	%	%	%	%	%	%
2-Fluoro-1,1'-Biphenyl	(30-115)	67	66	69	72	61	60	77	70	66
2-Fluorophenol	(25-121)	67	56	61	62	62	52	71	62	57
d5-Nitrobenzene	(23-120)	66	56	59	61	62	52	70	64	56
d5-Phenol	(24-113)	68	66	68	73	64	59	78	70	70
d14-Terphenyl	(18-137)	75	76	70	72	61	61	77	73	101
2,4,6-Tribromophenol	(19-122)	49	4 A	14 A	21	70	20	18 A	16 A	317 A

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ORGANIC QUALITY CONTROL (SURROGATE RECOVERIES)

Matrix: SOLIDS

SURROGATES	Surrogate Limits	98040309 TR-07A SAMPLE	98040310 TR-03E SAMPLE	98040311 TR-02C SAMPLE	98040312 TR-02A SAMPLE	98040313 TR-01B SAMPLE	98040314 TR-01A SAMPLE	98040315 TR-04E SAMPLE	98040316 SD-03 SAMPLE	98040317 SD-04 SAMPLE
PCBs and Pesticides by Gas Chromatography	**Range**	%	%	%	%	%	%	%	%	%
Decachlorobiphenyl	(60-150)	100	114	0 A	116	118	119	155 A	120	98
Tetrachloro-M-Xylene	(60-150)	115	104	122	105	114	113	100	98	117
Semivolatile Organics by GC/MS	**Range**	%	%	%	%	%	%	%	%	%
2-Fluoro-1,1'-Biphenyl	(30-115)	78	66	76	55	64	74	80	74	67
2-Fluorophenol	(25-121)	61	57	65	54	59	72	74	69	62
d5-Nitrobenzene	(23-120)	58	57	66	54	57	71	72	70	63
d5-Phenol	(24-113)	71	67	72	57	63	76	78	70	61
d14-Terphenyl	(18-137)	103	73	160 A	52	63	72	79	74	64
2,4,6-Tribromophenol	(19-122)	85	60	73	43	40	62	68	53	60
Volatile Organics by Purge and Trap GC/MS	**Range**	%	%	%	%	%	%	%	%	%
Bromofluorobenzene	(59-113)								96	96
d4-1,2-Dichloroethane	(70-121)								101	105
d8-Toluene	(84-138)								97	101

Matrix: SOLIDS

SURROGATES	Surrogate Limits	98040318 SD-05 SAMPLE	98040320 SS-21 SAMPLE	98040321 SS-20 SAMPLE	98040325 SD-06 SAMPLE	98040326 SD-08 SAMPLE	98040327 SS-14 SAMPLE	98040328 SD-07 SAMPLE	98040329 SS-08A SAMPLE	98040330 SL-08 SAMPLE
PCBs and Pesticides by Gas Chromatography	**Range**	%	%	%	%	%	%	%	%	%
Decachlorobiphenyl	(60-150)	118	268 A	119						
Tetrachloro-M-Xylene	(60-150)	106	131	114						
Semivolatile Organics by GC/MS	**Range**	%	%	%	%	%	%	%	%	%
2-Fluoro-1,1'-Biphenyl	(30-115)	70	66	76						
2-Fluorophenol	(25-121)	65	59	67						
d5-Nitrobenzene	(23-120)	65	59	68						
d5-Phenol	(24-113)	65	61	69						

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ORGANIC QUALITY CONTROL (SURROGATE RECOVERIES)

Matrix: SOLIDS

SURROGATES (continued)	Surrogate Limits	98040318 SD-05 SAMPLE	98040320 SS-21 SAMPLE	98040321 SS-20 SAMPLE	98040325 SD-06 SAMPLE	98040326 SD-08 SAMPLE	98040327 SS-14 SAMPLE	98040328 SD-07 SAMPLE	98040329 SS-08A SAMPLE	98040330 SL-08 SAMPLE
Semivolatile Organics by GC/MS	**Range**	%	%	%	%	%	%	%	%	%
2,4,6-Tribromophenol	(19-122)	47	18 A	6 A						
Volatile Organics by Purge and Trap GC/MS	**Range**	%	%	%	%	%	%	%	%	%
Bromofluorobenzene	(59-113)	81	84	83	94	74	86	95	89	90
d4-1,2-Dichloroethane	(70-121)	110	105	107	110	110	100	110	102	108
d8-Toluene	(84-138)	121	113	98	100	109	103	105	102	108

Matrix: SOLIDS

SURROGATES	Surrogate Limits	98040331 SL-108 FIELD DUP	98040332 SL-110 FIELD DUP	98040333 SL-10 SAMPLE	98040337 SL-11 SAMPLE
Volatile Organics by Purge and Trap GC/MS	**Range**	%	%	%	%
Bromofluorobenzene	(59-113)	86	77	80	93
d4-1,2-Dichloroethane	(70-121)	104	107	100	100
d8-Toluene	(84-138)	96	102	118	112

Matrix: WATER

SURROGATES	Surrogate Limits	98040129 WW-04 SAMPLE	98040133 WW-106 FIELD DUP	98040134 WW-06 SAMPLE	98040135 FB-01 FLD BLANK	98040136 RB-01 RINSATE	98040214 SW-07 SAMPLE	98040319 TB-02 TRP BLANK	98040322 RB-02 RINSATE	98040323 FB-02 FLD BLANK
PCBs and Pesticides by Gas Chromatography	**Range**	%	%	%	%	%	%	%	%	%
Decachlorobiphenyl	(60-150)	61	24 A	44	101	0 A	103		78	99
Tetrachloro-M-Xylene	(60-150)	94	96	88	102	102	94		90	91
Semivolatile Organics by GC/MS	**Range**	%	%	%	%	%	%	%	%	%
2-Fluoro-1,1'-Biphenyl	(43-116)	67	67	65	70	57	72		70	73
2-Fluorophenol	(21-110)	76	76	73	78	68	80		74	76
d5-Nitrobenzene	(35-114)	80	75	77	79	68	82		79	82

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ORGANIC QUALITY CONTROL (SURROGATE RECOVERIES)

Matrix: WATER

SURROGATES (continued)	Surrogate Limits	98040129 WW-04 SAMPLE	98040133 WW-106 FIELD DUP	98040134 WW-06 SAMPLE	98040135 FB-01 FLD BLANK	98040136 RB-01 RINSATE	98040214 SW-07 SAMPLE	98040319 TB-02 TRP BLANK	98040322 RB-02 RINSATE	98040323 FB-02 FLD BLANK
Semivolatile Organics by GC/MS	**Range**	%	%	%	%	%	%	%	%	%
d14-Terphenyl	(33-141)	83	82	90	84	80	85		85	87
2,4,6-Tribromophenol	(10-123)	78	87	94	81	79	86		75	83
Volatile Organics by Purge and Trap GC/MS	**Range**	%	%	%	%	%	%	%	%	%
Bromofluorobenzene	(86-115)							103	105	106
d4-1,2-Dichloroethane	(76-114)							111	98	110
d8-Toluene	(88-110)							91	102	94

Matrix: WATER

SURROGATES	Surrogate Limits	98040323 FB-02 SAMPLE	98040324 SW-07 SAMPLE	98040334 WW-04 SAMPLE	98040335 WW-106 FIELD DUP	98040336 WW-06 SAMPLE	98040338 TB-01 TRP BLANK	98040339 RB-01 RINSATE	98040340 FB-01 FLD BLANK
PCBs and Pesticides by Gas Chromatography	**Range**	%	%	%	%	%	%	%	%
Decachlorobiphenyl	(60-150)	99							
Tetrachloro-M-Xylene	(60-150)	91							
Semivolatile Organics by GC/MS	**Range**	%	%	%	%	%	%	%	%
2-Fluoro-1,1'-Biphenyl	(43-116)	73							
2-Fluorophenol	(21-110)	76							
d5-Nitrobenzene	(35-114)	82							
d5-Phenol	(10-110)	37							
d14-Terphenyl	(33-141)	87							
2,4,6-Tribromophenol	(10-123)	83							
Volatile Organics by Purge and Trap GC/MS	**Range**	%	%	%	%	%	%	%	%
Bromofluorobenzene	(86-115)	106	98	102	98	100	98	99	100
d4-1,2-Dichloroethane	(76-114)	110	106	103	106	105	103	106	102
d8-Toluene	(88-110)	94	99	100	90	98	99	93	95

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ORGANIC QUALITY CONTROL (MATRIX SPIKE RECOVERIES)

Matrix: SOLIDS

ANALYTES	98040211 SD-07 Spike Recovery MS	MSD	Recovery Limits	RPD	RPD Limits	98040321 SS-20 Spike Recovery MS	MSD	Recovery Limits	RPD	RPD Limits
PCBs and Pesticides by Gas Chromatography	%	%	Range	RPD	Limit	%	%	Range	RPD	Limit
Aldrin	125	111	(34-132)	12	43	101	98	(34-132)	3	43
4,4'-DDT	123	103	(23-134)	18	50	108	100	(23-134)	8	50
Dieldrin	116	111	(31-134)	4	38	112	97	(31-134)	14	38
Endrin	124	118	(42-139)	5	45	122	116	(42-139)	6	45
Gamma BHC (Lindane)	111	117	(46-127)	5	50	107	100	(46-127)	6	50
Heptachlor	107	101	(35-130)	6	31	90	86	(35-130)	5	31
Semivolatile Organics by GC/MS	%	%	Range	RPD	Limit	%	%	Range	RPD	Limit
Acenaphthene	70	81	(31-137)	15	19	87	81	(31-137)	7	19
4-Chloro-3-Methylphenol	74	76	(26-103)	4	33	81	79	(26-103)	2	33
2-Chlorophenol	51	70	(25-102)	32	50	66	62	(25-102)	6	50
Di-n-Butylphthalate	85	84	(11-117)	1	40	95	88	(11-117)	7	40
1,4-Dichlorobenzene	35	69	(28-104)	65 A	27	60	50	(28-104)	19	27
2,4-Dinitrotoluene	64	66	(28- 89)	3	47	82	80	(28- 89)	3	47
4-Nitrophenol	90	89	(11-114)	0	50	84	84	(11-114)	0	50
N-Nitroso-di-n-Propylamine	50	72	(41-126)	36	38	66	64	(41-126)	3	38
Pentachlorophenol	1 A	60	(17-109)	194 A	47	0 A	0 A	(17-109)	0	47
Phenol	54	69	(26- 90)	25	35	67	63	(26- 90)	7	35
Pyrene	91	91	(35-142)	0	36	86	84	(35-142)	2	36
1,2,4-Trichlorobenzene	48	73	(38-107)	40 A	23	68	65	(38-107)	4	23
Volatile Organics by Purge and Trap GC/MS						%	%	Range	RPD	Limit
Benzene						96	95	(66-142)	1	21
Chlorobenzene						98	102	(60-133)	4	21
1,1-Dichloroethene						88	91	(59-172)	3	22
Toluene						103	100	(59-139)	4	21
Trichloroethene						108	105	(62-137)	3	24

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ORGANIC QUALITY CONTROL (MATRIX SPIKE RECOVERIES)

Matrix: SOLIDS

98040328
SD-07

ANALYTES	Spike Recovery MS	Spike Recovery MSD	Recovery Limits	RPD	RPD Limits
Volatile Organics by Purge and Trap GC/MS	**%**	**%**	**Range**	**RPD**	**Limit**
Benzene	105	101	(66-142)	4	21
Chlorobenzene	103	99	(60-133)	4	21
1,1-Dichloroethene	100	94	(59-172)	6	22
Toluene	121	109	(59-139)	11	21
Trichloroethene	101	102	(62-137)	2	24

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ORGANIC QUALITY CONTROL (MATRIX SPIKE RECOVERIES)

Matrix: WATER

ANALYTES	98040134 WW-06 Spike Recovery MS	MSD	Recovery Limits	RPD	RPD Limits	98040336 WW-06 Spike Recovery MS	MSD	Recovery Limits	RPD	RPD Limits
PCBs and Pesticides by Gas Chromatography	%	%	Range	RPD	Limit					
Aldrin	73	77	(40-120)	5	22					
4,4'-DDT	83	96	(38-127)	14	27					
Dieldrin	107	107	(52-126)	0	18					
Endrin	120	118	(56-121)	1	21					
Gamma BHC (Lindane)	113	106	(56-123)	7	15					
Heptachlor	92	96	(40-131)	4	20					
Semivolatile Organics by GC/MS	%	%	Range	RPD	Limit					
Acenaphthene	96	79	(46-118)	19	31					
4-Chloro-3-Methylphenol	96	80	(23- 97)	18	42					
2-Chlorophenol	92	73	(27-123)	22	40					
Di-n-Butylphthalate	98	83	(11-117)	17	40					
1,4-Dichlorobenzene	64	54	(36- 97)	18	28					
2,4-Dinitrotoluene	102 A	83	(24- 96)	21	38					
4-Nitrophenol	100 A	81 A	(10- 80)	21	50					
N-Nitroso-di-n-Propylamine	86	70	(41-116)	20	38					
Pentachlorophenol	115 A	93	(9-103)	21	50					
Phenol	79	67	(12-110)	15	42					
Pyrene	99	84	(26-127)	16	31					
1,2,4-Trichlorobenzene	80	66	(39- 98)	20	28					
Volatile Organics by Purge and Trap GC/MS						%	%	Range	RPD	Limit
Benzene						90	97	(76-127)	8	11
Chlorobenzene						93	100	(75-130)	7	13
1,1-Dichloroethene						74	75	(61-145)	0	14
Toluene						90	97	(76-125)	7	13
Trichloroethene						100	98	(71-120)	2	14

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LABORATORY REAGENT BLANK RESULTS

Method: PCBs and Pesticides by Gas Chromatography

Run: OC980406 1 LRB

SURROGATES	NQL Factor	% Rec
Decachlorobiphenyl	1	85
Tetrachloro-M-Xylene	1	91

Run: OC980406A 1 LRB

SURROGATES	NQL Factor	% Rec
Decachlorobiphenyl	1	95
Tetrachloro-M-Xylene	1	83

Run: OC980408A 1 LRB

SURROGATES	NQL Factor	% Rec
Decachlorobiphenyl	1	100
Tetrachloro-M-Xylene	1	93

Run: OC980409 1 LRB

SURROGATES	NQL Factor	% Rec
Decachlorobiphenyl	1	116
Tetrachloro-M-Xylene	1	109

Run: OC980410 1 LRB

SURROGATES	NQL Factor	% Rec
Decachlorobiphenyl	1	108
Tetrachloro-M-Xylene	1	101

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LABORATORY REAGENT BLANK RESULTS

Method: Semivolatile Organics by GC/MS

Run: OI98501B 45 LRB

SURROGATES	NQL Factor	% Rec
2-Fluoro-1,1'-Biphenyl	1	56
2-Fluorophenol	1	66
d5-Nitrobenzene	1	65
d5-Phenol	1	70
d14-Terphenyl	1	89
2,4,6-Tribromophenol	1	78

ANALYTES	NQL Factor	ug/L
3,3'-Dichlorobenzidine	1	UJ
2,4-Dinitrophenol	1	UJ

Run: OI98501B 46 LRB

SURROGATES	NQL Factor	% Rec
2-Fluoro-1,1'-Biphenyl	1	73
2-Fluorophenol	1	82
d5-Nitrobenzene	1	82
d5-Phenol	1	85
d14-Terphenyl	1	88
2,4,6-Tribromophenol	1	83

ANALYTES	NQL Factor	ug/L
3,3'-Dichlorobenzidine	1	UJ
2,4-Dinitrophenol	1	UJ

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LABORATORY REAGENT BLANK RESULTS

Method: Semivolatile Organics by GC/MS

Run: OI98501B 47 LRB

SURROGATES	NQL Factor	% Rec
2-Fluoro-1,1'-Biphenyl	1	67
2-Fluorophenol	1	60
d5-Nitrobenzene	1	66
d5-Phenol	1	66
d14-Terphenyl	1	80
2,4,6-Tribromophenol	1	45

ANALYTES	NQL Factor	mg/Kg
2,4-Dinitrophenol	1	UJ

Run: OI98501B 48 LRB

SURROGATES	NQL Factor	% Rec
2-Fluoro-1,1'-Biphenyl	1	73
2-Fluorophenol	1	70
d5-Nitrobenzene	1	74
d5-Phenol	1	77
d14-Terphenyl	1	86
2,4,6-Tribromophenol	1	46

ANALYTES	NQL Factor	mg/Kg
3,3'-Dichlorobenzidine	1	UJ
2,4-Dinitrophenol	1	UJ

Run: OI98501B 49 LRB

SURROGATES	NQL Factor	% Rec
2-Fluoro-1,1'-Biphenyl	1	41
2-Fluorophenol	1	39
d5-Nitrobenzene	1	36

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LABORATORY REAGENT BLANK RESULTS

d14-Terphenyl	1	64
2,4,6-Tribromophenol	1	40

ANALYTES	NQL Factor	mg/Kg
Carbazole	1	UJ
3,3'-Dichlorobenzidine	1	UJ
2,4-Dinitrophenol	1	UJ
3-Nitroaniline	1	UJ

Run: OI98501B 50 LRB

SURROGATES	NQL Factor	% Rec
2-Fluoro-1,1'-Biphenyl	1	83
2-Fluorophenol	1	75
d5-Nitrobenzene	1	79
d5-Phenol	1	81
d14-Terphenyl	1	97
2,4,6-Tribromophenol	1	61

ANALYTES	NQL Factor	mg/Kg
3,3'-Dichlorobenzidine	1	UJ
2,4-Dinitrophenol	1	UJ

Run: OI98501B 51 LRB

SURROGATES	NQL Factor	% Rec
2-Fluoro-1,1'-Biphenyl	1	71
2-Fluorophenol	1	70
d5-Nitrobenzene	1	70
d5-Phenol	1	71
d14-Terphenyl	1	106
2,4,6-Tribromophenol	1	65

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LABORATORY REAGENT BLANK RESULTS

Method: Semivolatile Organics by GC/MS

Run: OI98501B 51 LRB

ANALYTES	NQL Factor	mg/Kg
3,3'-Dichlorobenzidine	1	UJ
2,4-Dinitrophenol	1	UJ

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LABORATORY REAGENT BLANK RESULTS

Method: Volatile Organics by Purge and Trap GC/MS

Run: OH985051 32 LRB

SURROGATES	NQL Factor	% Rec
Bromofluorobenzene	1	100
d4-1,2-Dichloroethane	1	102
d8-Toluene	1	101

ANALYTES	NQL Factor	ug/L
2-Chloroethylvinyl Ether	1	UJ
Dichlorodifluoromethane	1	UJ
Methylene Chloride	1	1 J
Naphthalene	1	2 J

Run: OH985051 33 LRB

SURROGATES	NQL Factor	% Rec
Bromofluorobenzene	1	97
d4-1,2-Dichloroethane	1	97
d8-Toluene	1	102

ANALYTES	NQL Factor	ug/Kg
Methylene Chloride	1	1 J

Run: OH985051 34 LRB

SURROGATES	NQL Factor	% Rec
Bromofluorobenzene	1	103
d4-1,2-Dichloroethane	1	102
d8-Toluene	1	99

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Facility: RADFORD ARMY AMMUNITION PLANT
Program: SUPERFUND F/F

Lab Request #: REQ98118

LABORATORY REAGENT BLANK RESULTS

Method: Volatile Organics by Purge and Trap GC/MS

Run: OH985051 34 LRB

ANALYTES	NQL Factor	ug/Kg
1,2-Dibromo-3-Chloropropane	1	UJ
Methylene Chloride	1	2 J

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Facility: RADFORD ARMY AMMUNITION PLANT
Program: SUPERFUND F/F

Lab Request #: REQ98118

ORGANIC WET/DRY CONVERSION

Sample Number:	98040126		98040127		98040128		98040130	
ANALYTES	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE
Percent Dry Weight	%		%		%		%	
Percent Dry Weight (105C)	73.8		73.3		71.8		73.0	
NQL Factor:	1		1		1		1	
PCBs and Pesticides by Gas Chromatography Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Alpha Chlordane	0.012 I	0.016 I						
Aroclor 1254	0.74	1.00	0.16	0.22	0.045	0.063	0.050	0.068
Aroclor 1260								
Beta BHC								
4,4'-DDD								
4,4'-DDE	0.010 I	0.014 I						
4,4'-DDT								
Delta BHC								
Dieldrin	0.0041 R,I	0.0056 R,I						
Endosulfan-I								
Endosulfan-II	0.041 R,I	0.056 R,I						
Endrin	0.0056 R,I	0.0076 R,I						
Endrin Aldehyde								
Gamma BHC (Lindane)								
Gamma Chlordane								
Heptachlor								
Heptachlor Epoxide	0.0032 R,I	0.0043 R,I						
Methoxychlor								
NQL Factor:	1		1		1		1	
Semivolatile Organics by GC/MS Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Acenaphthene								
Acenaphthylene								
Anthracene								
Benzo(a)Anthracene								
Benzo(a)Pyrene								
Benzo(B)Fluoranthene								

ORIGINAL (Red)

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Facility: RADFORD ARMY AMMUNITION PLANT
Program: SUPERFUND F/F

Lab Request #: REQ98118

ORGANIC WET/DRY CONVERSION

Sample Number:	98040126		98040127		98040128		98040130	
ANALYTES (continued)	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE
NQL Factor:	1		1		1		1	
Semivolatile Organics by GC/MS Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Benzo(k)Fluoranthene								
Benzoic Acid								
Bis(2-Ethylhexyl)Phthalate							0.2 J	0.3 J
Carbazole								
Chrysene								
Di-n-Butylphthalate								
Dibenzo(a,h)Anthracene								
Dibenzofuran								
3,3'-Dichlorobenzidine	UJ		UJ		UJ		UJ	
2,4-Dinitrophenol	UJ		UJ		UJ		UJ	
Fluoranthene			0.05 J	0.07 J	0.04 J	0.06 J		
Fluorene								
Indeno(1,2,3-cd)Pyrene								
2-Methylnaphthalene								
Naphthalene								
3-Nitroaniline								
Pentachlorophenol								
Phenanthrene								
Phenol								
Pyrene			0.03 J	0.04 J	0.03 J	0.04 J		

ORIGINAL (Red)

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Facility: RADFORD ARMY AMMUNITION PLANT
Program: SUPERFUND F/F

Lab Request #: REQ98118

ORGANIC WET/DRY CONVERSION

Sample Number:	98040131		98040132		98040208		98040209	
ANALYTES	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE
Percent Dry Weight	%		%		%		%	
Percent Dry Weight (105C)	72.5		38.4		91.3		78.6	
NQL Factor:	1		1		1		1	
PCBs and Pesticides by Gas Chromatography Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Alpha Chlordane								
Aroclor 1254	0.042	0.058	0.90	2.34				
Aroclor 1260								
Beta BHC			0.12 R	0.31 R				
4,4'-DDD								
4,4'-DDE								
4,4'-DDT								
Delta BHC								
Dieldrin								
Endosulfan-I								
Endosulfan-II								
Endrin								
Endrin Aldehyde								
Gamma BHC (Lindane)								
Gamma Chlordane								
Heptachlor								
Heptachlor Epoxide								
Methoxychlor								
NQL Factor:	1		1		1		1	
Semivolatile Organics by GC/MS Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Acenaphthene							0.2 J	0.3 J
Acenaphthylene			0.1 J	0.3 J				
Anthracene			0.1 J	0.3 J			0.3 J	0.4 J
Benzo(a)Anthracene			0.53	1.38			0.80	1.02
Benzo(a)Pyrene			0.48	1.25			0.77	0.98
Benzo(B)Fluoranthene			0.57	1.48			1.07	1.36

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Facility: RADFORD ARMY AMMUNITION PLANT
Program: SUPERFUND F/F

Lab Request #: REQ98118

ORGANIC WET/DRY CONVERSION

Sample Number:	98040131		98040132		98040208		98040209	
	WET	DRY	WET	DRY	WET	DRY	WET	DRY
ANALYTES (continued)	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE
NQL Factor:	1		1		1		1	
Semivolatile Organics by GC/MS Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Benzo(k)Fluoranthene			0.46	1.20			0.75	0.95
Benzoic Acid			0.08 J	0.21 J				
Bis(2-Ethylhexyl)Phthalate	0.1 J	0.1 J	0.2 J	0.5 J	0.05 J	0.05 J		
Carbazole			0.06 J	0.16 J			0.3 J	0.4 J
Chrysene			0.51	1.33			1.04	1.32
Di-n-Butylphthalate								
Dibenzo(a,h)Anthracene			0.08 J	0.21 J			0.1 J	0.1 J
Dibenzofuran							0.09 J	0.11 J
3,3'-Dichlorobenzidine	UJ		UJ		UJ		UJ	
2,4-Dinitrophenol	UJ		UJ		UJ		UJ	
Fluoranthene			1.13	2.94			2.74	3.49
Fluorene							0.2 J	0.3 J
Indeno(1,2,3-cd)Pyrene			0.2 J	0.5 J			0.33	0.42
2-Methylnaphthalene								
Naphthalene								
3-Nitroaniline								
Pentachlorophenol								
Phenanthrene			0.36	0.94			2.11	2.68
Phenol					0.07 J	0.08 J		
Pyrene			0.67	1.74			1.75	2.23

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ORGANIC WET/DRY CONVERSION

Sample Number:	98040210		98040211		98040301		98040302	
ANALYTES	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE
Percent Dry Weight	%		%		%		%	
Percent Dry Weight (105C)	62.0		68.2		75.3		74.0	
NQL Factor:	1		1		1		2	
PCBs and Pesticides by Gas Chromatography Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Alpha Chlordane							0.068 I	0.092 I
Aroclor 1254					1.1	1.5	5.2	7.0
Aroclor 1260					0.14	0.19		
Beta BHC								
4,4'-DDD								
4,4'-DDE								
4,4'-DDT								
Delta BHC								
Dieldrin								
Endosulfan-I								
Endosulfan-II							0.26 I	0.35 I
Endrin					0.052 R,I	0.069 R,I		
Endrin Aldehyde								
Gamma BHC (Lindane)								
Gamma Chlordane								
Heptachlor								
Heptachlor Epoxide								
Methoxychlor								
NQL Factor:	1		1		1		1	
Semivolatile Organics by GC/MS Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Acenaphthene								
Acenaphthylene							0.08 J	0.11 J
Anthracene							0.2 J	0.3 J
Benzo(a)Anthracene							0.3 J	0.4 J
Benzo(a)Pyrene					0.04 J	0.05 J	0.2 J	0.3 J
Benzo(B)Fluoranthene					0.07 J	0.09 J	0.85	1.15

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Facility: RADFORD ARMY AMMUNITION PLANT
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Lab Request #: REQ98118

ORGANIC WET/DRY CONVERSION

Sample Number:	98040210		98040211		98040301		98040302	
	WET	DRY	WET	DRY	WET	DRY	WET	DRY
ANALYTES (continued)	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE
NQL Factor:	1		1		1		1	
Semivolatile Organics by GC/MS Units:	**mg/Kg**	**mg/Kg**	**mg/Kg**	**mg/Kg**	**mg/Kg**	**mg/Kg**	**mg/Kg**	**mg/Kg**
Benzo(k)Fluoranthene					0.05 J	0.07 J	0.48	0.65
Benzoic Acid					0.2 J	0.3 J	0.3 J	0.4 J
Bis(2-Ethylhexyl)Phthalate			0.05 J	0.07 J	0.2 J	0.3 J	0.38	0.51
Carbazole			UJ		UJ		0.4 J	0.5 J
Chrysene					0.08 J	0.11 J	1.01	1.36
Di-n-Butylphthalate								
Dibenzo(a,h)Anthracene							0.05 J	0.07 J
Dibenzofuran								
3,3'-Dichlorobenzidine	UJ		UJ		UJ		UJ	
2,4-Dinitrophenol	UJ		UJ		UJ		UJ	
Fluoranthene					0.2 J	0.3 J	2.15	2.91
Fluorene								
Indeno(1,2,3-cd)Pyrene							0.1 J	0.1 J
2-Methylnaphthalene								
Naphthalene								
3-Nitroaniline			UJ		UJ		UJ	
Pentachlorophenol							0.3 J	0.4 J
Phenanthrene					0.1 J	0.1 J	0.67	0.91
Phenol								
Pyrene					0.1 J	0.1 J	1.38	1.86

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Lab Request #: REQ98118

ORGANIC WET/DRY CONVERSION

Sample Number:	98040303		98040304		98040305		98040306	
ANALYTES	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE
Percent Dry Weight	%		%		%		%	
Percent Dry Weight (105C)	70.4		62.5		73.7		73.8	
NQL Factor:	1		5		2		1	
PCBs and Pesticides by Gas Chromatography Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Alpha Chlordane								
Aroclor 1254	0.32	0.45			0.15	0.20	0.12	0.16
Aroclor 1260	0.34	0.48					0.044	0.060
Beta BHC								
4,4'-DDD								
4,4'-DDE								
4,4'-DDT								
Delta BHC								
Dieldrin								
Endosulfan-I								
Endosulfan-II					0.033 R,I	0.045 R,I	0.033 R,I	0.045 R,I
Endrin							0.018 R,I	0.024 R,I
Endrin Aldehyde								
Gamma BHC (Lindane)								
Gamma Chlordane								
Heptachlor								
Heptachlor Epoxide								
Methoxychlor								
NQL Factor:	1		5		1		1	
Semivolatile Organics by GC/MS Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Acenaphthene								
Acenaphthylene							0.04 J	0.05 J
Anthracene					0.04 J	0.05 J	0.1 J	0.1 J
Benzo(a)Anthracene					0.1 J	0.1 J	0.2 J	0.3 J
Benzo(a)Pyrene	0.05 J	0.07 J	0.4 J	0.6 J	0.09 J	0.12 J	0.2 J	0.3 J
Benzo(B)Fluoranthene	0.07 J	0.10 J	0.5 J	0.8 J	0.3 J	0.4 J	0.64	0.87

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Facility: RADFORD ARMY AMMUNITION PLANT
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Lab Request #: REQ98118

ORGANIC WET/DRY CONVERSION

Sample Number:	98040303		98040304		98040305		98040306	
	WET	DRY	WET	DRY	WET	DRY	WET	DRY
ANALYTES (continued)	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE
NQL Factor:	1		5		1		1	
Semivolatile Organics by GC/MS Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Benzo(k)Fluoranthene	0.05 J	0.07 J	0.4 J	0.6J	0.2 J	0.3J	0.34	0.46
Benzoic Acid	0.51	0.72	7.49	11.98	0.43	0.58	1.00	1.36
Bis(2-Ethylhexyl)Phthalate	0.39	0.55	0.6 J	1.0J	0.55	0.75	0.70	0.95
Carbazole	UJ				0.03 J	0.04 J	0.06 J	0.08 J
Chrysene	0.08 J	0.11 J	0.5 J	0.8J	0.2 J	0.3J	0.41	0.56
Di-n-Butylphthalate								
Dibenzo(a,h)Anthracene							0.04 J	0.05 J
Dibenzofuran								
3,3'-Dichlorobenzidine	UJ		UJ		UJ		UJ	
2,4-Dinitrophenol	UJ		UJ		UJ		UJ	
Fluoranthene	0.09 J	0.13 J	0.3 J	0.5J	0.3 J	0.4J	0.79	1.07
Fluorene								
Indeno(1,2,3-cd)Pyrene			0.1 J	0.2J	0.04 J	0.05 J	0.07 J	0.09 J
2-Methylnaphthalene								
Naphthalene								
3-Nitroaniline	UJ				UJ		UJ	
Pentachlorophenol			79.3 C	126.9C				
Phenanthrene	0.04 J	0.06 J					0.03 J	0.04 J
Phenol								
Pyrene	0.07 J	0.10 J	0.4 J	0.6J	0.2 J	0.3J	0.57	0.77

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Facility: RADFORD ARMY AMMUNITION PLANT
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Lab Request #: REQ98118

ORGANIC WET/DRY CONVERSION

Sample Number:	98040307		98040308		98040309		98040310	
	WET	DRY	WET	DRY	WET	DRY	WET	DRY
ANALYTES	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE
Percent Dry Weight	%		%		%		%	
Percent Dry Weight (105C)	69.0		78.1		64.7		72.4	
NQL Factor:	2		1		2		2	
PCBs and Pesticides by Gas Chromatography Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Alpha Chlordane	0.19 R,I	0.28 R,I			0.037 I	0.057 I		
Aroclor 1254	17	25			2.8	4.3	0.078	0.108
Aroclor 1260			0.28	0.36				
Beta BHC								
4,4'-DDD								
4,4'-DDE					0.072 R,I	0.111 R,I		
4,4'-DDT								
Delta BHC								
Dieldrin								
Endosulfan-I								
Endosulfan-II	1.0 R,I	1.4 R,I			0.25 I	0.39 I		
Endrin	0.21 R,I	0.30 R,I			0.034 R,I	0.053 R,I		
Endrin Aldehyde								
Gamma BHC (Lindane)								
Gamma Chlordane								
Heptachlor								
Heptachlor Epoxide	0.096 R,I	0.139 R,I						
Methoxychlor								
NQL Factor:	1		1		1		1	
Semivolatile Organics by GC/MS Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Acenaphthene			0.1 J	0.1 J	0.03 J	0.05 J		
Acenaphthylene	0.07 J	0.10 J						
Anthracene	0.1 J	0.1 J			0.07 J	0.11 J		
Benzo(a)Anthracene	0.1 J	0.1 J			0.3 J	0.5 J	0.05 J	0.07 J
Benzo(a)Pyrene	0.2 J	0.3 J	0.3 J	0.4 J	0.2 J	0.3 J	0.05 J	0.07 J
Benzo(B)Fluoranthene	0.38	0.55	1.14	1.46	0.49	0.76	0.09 J	0.12 J

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ORGANIC WET/DRY CONVERSION

Sample Number:	98040307		98040308		98040309		98040310	
	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE
ANALYTES (continued)								
NQL Factor:	1		1		1		1	
Semivolatile Organics by GC/MS Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Benzo(k)Fluoranthene	0.3 J	0.4 J			0.47	0.73	0.06 J	0.08 J
Benzoic Acid	0.60	0.87	1.25	1.60	0.56	0.87	0.2 J	0.3 J
Bis(2-Ethylhexyl)Phthalate	0.68	0.99	0.90	1.15	0.65	1.00	0.1 J	0.1 J
Carbazole	0.1 J	0.1 J	UJ		0.2 J	0.3 J	UJ	
Chrysene	0.39	0.57	1.07	1.37	0.92	1.42	0.08 J	0.11 J
Di-n-Butylphthalate					0.1 J	0.2 J		
Dibenzo(a,h)Anthracene								
Dibenzofuran			0.2 J	0.3 J	0.05 J	0.08 J		
3,3'-Dichlorobenzidine	UJ		UJ		UJ		UJ	
2,4-Dinitrophenol	UJ		UJ		UJ		UJ	
Fluoranthene	0.53	0.77	3.25	4.16	1.63	2.52	0.1 J	0.1 J
Fluorene					0.04 J	0.06 J		
Indeno(1,2,3-cd)Pyrene	0.05 J	0.07 J	0.1 J	0.1 J	0.1 J	0.2 J		
2-Methylnaphthalene			0.05 J	0.06 J				
Naphthalene			0.08 J	0.10 J	0.04 J	0.06 J		
3-Nitroaniline	UJ		UJ				UJ	
Pentachlorophenol	2.14	3.10						
Phenanthrene	0.1 J	0.1 J	2.68	3.43	0.99	1.53	0.07 J	0.10 J
Phenol								
Pyrene	0.37	0.54	2.43	3.11	1.46	2.26	0.1 J	0.1 J

ORIGINAL (Red)

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Facility: RADFORD ARMY AMMUNITION PLANT
Program: SUPERFUND F/F

Lab Request #: REQ98118

ORGANIC WET/DRY CONVERSION

Sample Number:	98040311		98040312		98040313		98040314	
ANALYTES	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE
Percent Dry Weight	%		%		%		%	
Percent Dry Weight (105C)	78.7		85.1		82.0		79.0	
NQL Factor:	5		2		1		1	
PCBs and Pesticides by Gas Chromatography Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Alpha Chlordane	0.11 R	0.14 R						
Aroclor 1254								
Aroclor 1260								
Beta BHC								
4,4'-DDD	0.24 R	0.30 R						
4,4'-DDE			0.034	0.040				
4,4'-DDT	0.19 J,R	0.24 J,R					0.030 R	0.038 R
Delta BHC	0.13 R	0.17 R						
Dieldrin	0.21	0.27						
Endosulfan-I	0.11 R	0.14 R						
Endosulfan-II								
Endrin							0.019	0.024
Endrin Aldehyde							0.018 R	0.023 R
Gamma BHC (Lindane)								
Gamma Chlordane								
Heptachlor	0.16 R	0.20 R						
Heptachlor Epoxide								
Methoxychlor							0.10 R	0.13 R
NQL Factor:	20		1		1		1	
Semivolatile Organics by GC/MS Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Acenaphthene								
Acenaphthylene			0.06 J	0.07 J			0.2 J	0.3 J
Anthracene			0.1 J	0.1 J			0.80	1.01
Benzo(a)Anthracene			0.3 J	0.4 J			2.80	3.54
Benzo(a)Pyrene			0.3 J	0.4 J	0.03 J	0.04 J	4.14 C	5.24 C
Benzo(B)Fluoranthene			0.86	1.01	0.07 J	0.09 J	9.95 C	12.59 C

ORIGINAL (Red)

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Facility: RADFORD ARMY AMMUNITION PLANT
Program: SUPERFUND F/F

Lab Request #: REQ98118

ORGANIC WET/DRY CONVERSION

Sample Number:	98040311		98040312		98040313		98040314	
ANALYTES (continued)	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE
NQL Factor:	20		1		1		1	
Semivolatile Organics by GC/MS Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Benzo(k)Fluoranthene			0.48	0.56	0.04 J	0.05 J	5.14 C	6.51 C
Benzoic Acid					0.1 J	0.1 J	0.2 J	0.3 J
Bis(2-Ethylhexyl)Phthalate			0.09 J	0.11 J	0.2 J	0.2 J	0.3 J	0.4 J
Carbazole			0.1 J	0.1 J			0.4 J	0.5 J
Chrysene			0.56	0.66	0.05 J	0.06 J	6.04 C	7.65 C
Di-n-Butylphthalate								
Dibenzo(a,h)Anthracene			0.04 J	0.05 J			0.74	0.94
Dibenzofuran								
3,3'-Dichlorobenzidine	UJ		UJ		UJ		UJ	
2,4-Dinitrophenol	UJ		UJ		UJ		UJ	
Fluoranthene			0.33	0.39			3.47 C	4.39 C
Fluorene								
Indeno(1,2,3-cd)Pyrene			0.09 J	0.11 J			4.79 C	6.06 C
2-Methylnaphthalene								
Naphthalene								
3-Nitroaniline			UJ				UJ	
Pentachlorophenol	650 C	826 C	0.09 J	0.11 J				
Phenanthrene			0.05 J	0.06 J			0.2 J	0.3 J
Phenol								
Pyrene			0.73	0.86			3.83 C	4.85 C

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Lab Request #: REQ98118

ORGANIC WET/DRY CONVERSION

Sample Number:	98040315		98040316		98040317		98040318	
ANALYTES	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE
Percent Dry Weight	%		%		%		%	
Percent Dry Weight (105C)	71.8		77.4		69.1		69.7	
NQL Factor:	1		1		1		1	
PCBs and Pesticides by Gas Chromatography Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Alpha Chlordane	0.69 I	0.96 I						
Aroclor 1254	54	75						
Aroclor 1260	13	18						
Beta BHC					0.028 R	0.041 R		
4,4'-DDD	0.29 R,I	0.40 R,I						
4,4'-DDE								
4,4'-DDT	0.41 R,I	0.57 R,I						
Delta BHC					0.015 R	0.022 R		
Dieldrin	0.45 I	0.63 I			0.033 R	0.048 R		
Endosulfan-I					0.0084 R	0.0122 R		
Endosulfan-II	2.5 R,I	3.5 R,I						
Endrin	0.66 R,I	0.92 R,I						
Endrin Aldehyde	0.28 R,I	0.39 R,I			0.025	0.036		
Gamma BHC (Lindane)					0.011 R	0.016 R		
Gamma Chlordane								
Heptachlor								
Heptachlor Epoxide	0.15 R,I	0.21 R,I						
Methoxychlor								
NQL Factor:	1		1		1		1	
Semivolatile Organics by GC/MS Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Acenaphthene								
Acenaphthylene								
Anthracene								
Benzo(a)Anthracene								
Benzo(a)Pyrene								
Benzo(B)Fluoranthene								

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ORGANIC WET/DRY CONVERSION

Sample Number:	98040315		98040316		98040317		98040318	
ANALYTES (continued)	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE
NQL Factor:	1		1		1		1	
Semivolatile Organics by GC/MS Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Benzo(k)Fluoranthene								
Benzoic Acid	0.40	0.56						
Bis(2-Ethylhexyl)Phthalate	0.48	0.67					0.1 J	0.1 J
Carbazole	UJ							
Chrysene								
Di-n-Butylphthalate								
Dibenzo(a,h)Anthracene								
Dibenzofuran								
3,3'-Dichlorobenzidine	UJ		UJ		UJ		UJ	
2,4-Dinitrophenol	UJ		UJ		UJ		UJ	
Fluoranthene					0.04 J	0.06 J		
Fluorene								
Indeno(1,2,3-cd)Pyrene								
2-Methylnaphthalene								
Naphthalene								
3-Nitroaniline	UJ							
Pentachlorophenol								
Phenanthrene								
Phenol								
Pyrene								
NQL Factor:			1		1		1	
Volatile Organics by Purge and Trap GC/MS Units:			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acetone			2 J	3 J	32.8	47.5		
2-Butanone					7.4	10.7		
Sec-Butylbenzene								
Carbon Disulfide								
1,2-Dibromo-3-Chloropropane								
Ethyl Benzene								
Isopropylbenzene								

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ORGANIC WET/DRY CONVERSION

Sample Number:	98040315		98040316		98040317		98040318	
ANALYTES (continued)	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE
NQL Factor:			1		1		1	
Volatile Organics by Purge and Trap GC/MS Units:			ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Methylene Chloride			2 B	3 B	1 B	1 B	2 B	3 B
N-Propylbenzene								
1,2,4-Trimethylbenzene								

Sample Number:	98040320		98040321		98040325		98040326	
ANALYTES	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE
Percent Dry Weight	%		%		%		%	
Percent Dry Weight (105C)	77.9		86.7		66.0		78.8	
NQL Factor:	2		2					
PCBs and Pesticides by Gas Chromatography Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg				
Alpha Chlordane	0.13 R	0.17 R						
Aroclor 1254								
Aroclor 1260								
Beta BHC								
4,4'-DDD								
4,4'-DDE								
4,4'-DDT								
Delta BHC								
Dieldrin								
Endosulfan-I								
Endosulfan-II								
Endrin								
Endrin Aldehyde								
Gamma BHC (Lindane)								
Gamma Chlordane	0.099	0.127						
Heptachlor								
Heptachlor Epoxide								

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ORGANIC WET/DRY CONVERSION

Sample Number:	98040320		98040321		98040325		98040326	
ANALYTES (continued)	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE
NQL Factor:	1		1					
Semivolatile Organics by GC/MS Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg				
Acenaphthene								
Acenaphthylene								
Anthracene								
Benzo(a)Anthracene			0.06 J	0.07 J				
Benzo(a)Pyrene			0.08 J	0.09 J				
Benzo(B)Fluoranthene			0.1 J	0.1 J				
Benzo(g,h,i)Perylene			0.03 J	0.03 J				
Benzo(k)Fluoranthene			0.08 J	0.09 J				
Benzoic Acid								
Bis(2-Ethylhexyl)Phthalate	0.2 J	0.3 J	0.1 J	0.1 J				
Carbazole								
Chrysene	0.07 J	0.09 J	0.1 J	0.1 J				
Di-n-Butylphthalate			0.45	0.52				
Dibenzo(a,h)Anthracene								
Dibenzofuran								
3,3'-Dichlorobenzidine	UJ		UJ					
2,4-Dinitrophenol	UJ		UJ					
Fluoranthene	0.1 J	0.1 J	0.2 J	0.2 J				
Fluorene								
Indeno(1,2,3-cd)Pyrene			0.04 J	0.05 J				
2-Methylnaphthalene								
Naphthalene								
3-Nitroaniline								
Pentachlorophenol								
Phenanthrene	0.05 J	0.06 J	0.1 J	0.1 J				
Phenol								
Pyrene	0.1 J	0.1 J	0.1 J	0.1 J				

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ORGANIC WET/DRY CONVERSION

Sample Number:	98040320		98040321		98040325		98040326	
	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE
ANALYTES (continued)								
NQL Factor:	1		1		1		1	
Volatile Organics by Purge and Trap GC/MS Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acetone	7.6	9.8						
2-Butanone								
Sec-Butylbenzene								
Carbon Disulfide								
1,2-Dibromo-3-Chloropropane								
Ethyl Benzene								
Isopropylbenzene								
P-Isopropyltoluene								
Methylene Chloride	2 B	3 B	1 B	1 B	1 B	2 B	1 B	1 B
N-Propylbenzene								
1,2,4-Trimethylbenzene								

Sample Number:	98040327		98040328		98040329		98040330	
	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE
ANALYTES								
Percent Dry Weight	%		%		%		%	
Percent Dry Weight (105C)	88.5		54.4		73.5		74.6	
NQL Factor:	1		1		1		1	
Volatile Organics by Purge and Trap GC/MS Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acetone								
2-Butanone								
Sec-Butylbenzene								
Carbon Disulfide								
1,2-Dibromo-3-Chloropropane								
Ethyl Benzene								
Isopropylbenzene								
P-Isopropyltoluene								
Methylene Chloride	2 B	2 B	1 B	2 B	2 B	3 B	2 B	3 B

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ORGANIC WET/DRY CONVERSION

Sample Number:	98040327		98040328		98040329		98040330	
ANALYTES (continued)	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE
NQL Factor:	1		1		1		1	
Volatile Organics by Purge and Trap GC/MS Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
1,2,4-Trimethylbenzene								

Sample Number:	98040331		98040332		98040333		98040337	
ANALYTES	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE	WET SAMPLE	DRY SAMPLE
Percent Dry Weight	%		%		%		%	
Percent Dry Weight (105C)	74.0		73.3		75.7		24.3	
NQL Factor:	1		1		1		1	
Volatile Organics by Purge and Trap GC/MS Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Acetone					24.4	32.2	57.6	237.0
2-Butanone					5.7	7.5	14.9	61.3
Sec-Butylbenzene							4 J	16 J
Carbon Disulfide							2 J	8 J
1,2-Dibromo-3-Chloropropane					UJ		UJ	
Ethyl Benzene							5.9	24.3
Isopropylbenzene							4 J	16 J
P-Isopropyltoluene					3 J	4 J		
Methylene Chloride	2 B	3 B	2 B	3 B	2 B	3 B	2 B	8 B
N-Propylbenzene							5.5	22.6
1,2,4-Trimethylbenzene							5.4	22.2

The wet/dry weight conversion table is presented for the convenience of the data user. The attached analyst narratives state whether a test was determined on a wet or dry weight basis. Any difference in significant figures between the two columns is an artifact of the reporting function and does not imply that the calculated value has greater precision than the measured value.

ORIGINAL (Red)

ORIGINAL (Red)

Office of Analytical Services and Quality Assurance
Extractable Organics Analysis
Nominal Quantitation Limits (NQL)

Units: Solids = mg/kg (wet) NPTC = Non-Priority Pollutant Target Compound

Actual Quantitation Limit = (NQL Factor) X NQL

CAS	ANALYTE		NQL
62-75-9	N-Nitrosodimethylamine		0.33
108-95-2	Phenol		0.33
62-53-3	Aniline	NPTC	0.33
111-44-4	bis(2-Chloroethyl)Ether		0.33
95-57-8	2-Chlorophenol		0.33
541-73-1	1,3-Dichlorobenzene		0.33
106-46-7	1,4-Dichlorobenzene		0.33
100-51-6	Benzyl Alcohol	NPTC	0.33
95-50-1	1,2-Dichlorobenzene		0.33
95-48-7	2-Methylphenol	NPTC	0.33
108-60-1	bis(2-chloroisopropyl)Ether		0.33
106-44-5	4-Methylphenol	NPTC	0.33
621-64-7	N-Nitroso-di-n-Propylamime		0.33
67-72-1	Hexachloroethane		0.33
98-95-3	Nitrobenzene		0.33
78-59-1	Isophorone		0.33
88-75-5	2-Nitrophenol		0.33
105-67-9	2,4-Dimethylphenol		0.33
65-85-0	Benzoic Acid	NPTC	1.67
111-91-1	bis(2-Chloroethoxy)Methane		0.33
120-83-2	2,4-Dichlorophenol		0.33
120-82-1	1,2,4-Trichlorobenzene		0.33
91-20-3	Naphthalene		0.33
106-47-8	4-Chloroaniline	NPTC	0.33
87-68-3	Hexachlorobutadiene		0.33
59-50-7	4-Chloro-3-Methylphenol		0.33
91-57-6	2-Methylnaphthalene	NPTC	0.33
77-47-4	Hexachlorocyclopentadiene		0.33
88-06-2	2,4,6-Trichlorophenol		0.33
95-95-4	2,4,5-Trichlorophenol	NPTC	1.67
91-58-7	2-Chloronaphthalene		0.33
88-74-4	2-Nitroaniline	NPTC	1.67
131-11-3	Dimethylphthalate		0.33
208-96-8	Acenaphthylene		0.33

CAS	ANALYTE		NQL
99-09-2	3-Nitroaniline	NPTC	1.67
83-32-9	Acenaphthene		0.33
51-28-5	2, 4-Dinitrophenol		1.67
100-02-7	4-Nitrophenol		1.67
132-64-9	Dibenzofuran	NPTC	0.33
606-20-2	2,6-Dinitrotoluene		0.33
121-14-2	2,6-Dinitrotoluene		0.33
84-66-2	Diethylphthalate		0.33
7005-72-3	4-Chlorophenylphenylether		0.33
86-73-7	Fluorene		0.33
100-01-6	4-Nitroaniline	NPTC	1.67
86-30-6	N-Nitrosodiphenylamine(1)		0.33
534-52-1	4,6-Dinitro-2-Methylphenol		1.67
101-55-3	4-Bromophenylphenylether		0.33
118-74-1	Hexachlorobenzene		0.33
87-86-5	Pentachlorophenol		1.67
85-01-8	Phenanthrene		0.33
120-12-7	Anthracene		0.33
86-74-8	Carbazole	NPTC	0.33
84-74-2	Di-n-Butylphthalate		0.33
206-44-0	Fluoranthene		0.33
92-87-5	Benzidine		1.67
129-00-0	Pyrene		0.33
85-68-7	Butylbenzylphthalate		0.33
91-94-1	3,3'-Dichlorobenzidine		0.67
56-55-3	Benzo(a)Anthracene		0.33
117-81-7	bis(2-Ethylhexyl)Phthalate		0.33
218-01-9	Chrysene		0.33
117-84-0	Di-n-Octylphthalate		0.33
205-99-2	Benzo(b)Fluoranthene		0.33
207-08-9	Benzo(k)Fluoranthene		0.33
50-32-8	Benzo(a)Pyrene		0.33
193-39-5	Indeno(1,2,3-cd)Pyrene		0.33
53-70-3	Dibenzo(a,h)Anthracene		0.33
191-24-2	Benzo (g,h,i)Perylene		0.33

(1) N-nitrosodiphenylamine decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine.

The "Nominal Quantitation Limit" factor is an overall correction factor applied to the method's NQLs for analytical adjustments made during the analysis (i.e., for extractions of more or less than the ideal 30 grams for soil samples, for sample extracts not concentrated to 1.00 ml due to excessive foaming/darkness of the extract, and for sample extract dilutions prior to analyses).

For example, the typical NQL factor for an OASQA soil sample is 1.5. Therefore, the estimated Actual Quantitation Limit for phenol would be 0.50 mg/Kg (i.e., 1.5 x .33 mg/Kg).

Rev. October 16, 1996

ORIGINAL (Red)

Office of Analytical Services and Quality Assurance
Extractable Organics Analysis
Nominal Quantitation Limits (NQL)

Units: Water = ug/L NPTC = Non-Priority Pollutant Target Compound

Actual Quantitation Limit = (NQL Factor) X NQL

CAS	ANALYTE		NQL
62-75-9	N-Nitrosodimethylamine		10
108-95-2	Phenol		10
62-53-3	Aniline	NPTC	10
111-44-4	bis(2-Chloroethyl)Ether		10
95-57-8	2-Chlorophenol		10
541-73-1	1,3-Dichlorobenzene		10
106-46-7	1,4-Dichlorobenzene		10
100-51-6	Benzyl Alcohol	NPTC	10
95-50-1	1,2-Dichlorobenzene		10
95-48-7	2-Methylphenol	NPTC	10
108-60-1	bis(2-chloroisopropyl)Ether		10
106-44-5	4-Methylphenol	NPTC	10
621-64-7	N-Nitroso-di-n-Propylamime		10
67-72-1	Hexachloroethane		10
98-95-3	Nitrobenzene		10
78-59-1	Isophorone		10
88-75-5	2-Nitrophenol		10
105-67-9	2,4-Dimethylphenol		10
65-85-0	Benzoic Acid	NPTC	50
111-91-1	bis(2-Chloroethoxy)Methane		10
120-83-2	2,4-Dichlorophenol		10
120-82-1	1,2,4-Trichlorobenzene		10
91-20-3	Naphthalene		10
106-47-8	4-Chloroaniline	NPTC	10
87-68-3	Hexachlorobutadiene		10
59-50-7	4-Chloro-3-Methylphenol		10
91-57-6	2-Methylnaphthalene	NPTC	10
77-47-4	Hexachlorocyclopentadiene		10
88-06-2	2,4,6-Trichlorophenol		10
95-95-4	2,4,5-Trichlorophenol	NPTC	50
91-58-7	2-Chloronaphthalene		10
88-74-4	2-Nitroaniline	NPTC	50
131-11-3	Dimethylphthalate		10
208-96-8	Acenaphthylene		10

CAS	ANALYTE		NQL
99-09-2	3-Nitroaniline	NPTC	50
83-32-9	Acenaphthene		10
51-28-5	2,4-Dinitrophenol		50
100-02-7	4-Nitrophenol		50
132-64-9	Dibenzofuran	NPTC	10
606-20-2	2,6-Dinitrotoluene		10
121-14-2	2,6-Dinitrotoluene		10
84-66-2	Diethylphthalate		10
7005-72-3	4-Chlorophenylphenylether		10
86-73-7	Fluorene		10
100-01-6	4-Nitroaniline	NPTC	50
86-30-6	N-Nitrosodiphenylamine(1)		10
534-52-1	4,6-Dinitro-2-Methylphenol		50
101-55-3	4-Bromophenylphenylether		10
118-74-1	Hexachlorobenzene		10
87-86-5	Pentachlorophenol		50
85-01-8	Phenanthrene		10
120-12-7	Anthracene		10
86-74-8	Carbazole	NPTC	10
84-74-2	Di-n-Butylphthalate		10
206-44-0	Fluoranthene		10
92-87-5	Benzidine		50
129-00-0	Pyrene		10
85-68-7	Butylbenzylphthalate		10
91-94-1	3,3'-Dichlorobenzidine		20
56-55-3	Benzo(a)Anthracene		10
117-81-7	bis(2-Ethylhexyl)Phthalate		10
218-01-9	Chrysene		10
117-84-0	Di-n-Octylphthalate		10
205-99-2	Benzo(b)Fluoranthene		10
207-08-9	Benzo(k)Fluoranthene		10
50-32-8	Benzo(a)Pyrene		10
193-39-5	Indeno(1,2,3-cd)Pyrene		10
53-70-3	Dibenzo(a,h)Anthracene		10
191-24-2	Benzo (g,h,i)Perylene		10

(1) N-nitrosodiphenylamine decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine.

The "Nominal Quantitation Limit" factor is an overall correction factor applied to the method's NQLs for analytical adjustments made during the analysis (i.e., for extractions of more or less than the ideal 1000 ml for aqueous samples, for sample extracts not concentrated to 1.00 ml due to excessive foaming/darkness of the extract, and for sample extract dilutions prior to analyses).

Rev. October 16, 1996

ORIGINAL (Red)

Office of Analytical Services and Quality Assurance
Pesticide and PCB Analysis
Nominal Quantitation Limits (NQL)

Units: Solids = mg/kg NPTC = Non-Priority Pollutant Target Compound

Actual Quantitation Limit = (NQL Factor) X NQL

CAS	Pesticide		NQL
319-84-6	Alpha-BHC		0.002
319-85-7	Beta-BHC		0.002
319-86-8	Delta-BHC		0.002
58-89-8	Gamma-BHC		0.002
76-44-8	Heptachlor		0.002
309-00-2	Aldrin		0.002
1024-57-3	Heptachlor Epoxide		0.002
959-98-8	Endosulfan I		0.002
60-57-1	Dieldrin		0.003
72-55-9	4,4'-DDE		0.003
72-20-8	Endrin		0.003
33213-65-9	Endosulfan II		0.003
72-54-8	4,4'-DDD		0.003
1031-07-8	Endosulfan Sulfate		0.003
50-29-3	4,4'-DDT		0.003
7421-93-4	Endrin Aldehyde		0.003
53494-70-5	Endrin Ketone	NPTC	0.003
72-43-5	Methoxychlor	NPTC	0.017
5103-71-9	Alpha-Chlordane		0.002
5103-74-2	Gamma-Chlordane		0.002
57-74-9	Chlordane		0.033
8001-35-2	Toxaphene		0.167

CAS	PCB	NQL
12674-11-2	Aroclor-1016	0.033
1104-28-2	Aroclor-1221	0.033
11141-16-5	Aroclor-1232	0.033
53469-21-9	Aroclor-1242	0.033
12672-29-6	Aroclor-1248	0.033
11097-69-1	Aroclor-1254	0.033
11096-82-5	Aroclor-1260	0.033

The "Nominal Quantitation Limit" listed for each target compound is based on the Superfund CLP Protocol. The Actual Quantitation Limits are related to the NQLs by the NQL Factor. This NQL factor reflects procedural steps, e.g., extract dilution, which influence quantitation limits.

ORIGINAL (Red)

Office of Analytical Services and Quality Assurance
Pesticide and PCB Analysis
Nominal Quantitation Limits (NQL)

Units: Water = ug/L NPTC = Non-Priority Pollutant Target Compound

Actual Quantitation Limit = (NQL Factor) X NQL

CAS	Pesticide		NQL
319-84-6	Alpha-BHC		0.05
319-85-7	Beta-BHC		0.05
319-86-8	Delta-BHC		0.05
58-89-8	Gamma-BHC		0.05
76-44-8	Heptachlor		0.05
309-00-2	Aldrin		0.05
1024-57-3	Heptachlor Epoxide		0.05
959-98-8	Endosulfan I		0.05
60-57-1	Dieldrin		0.10
72-55-9	4,4'-DDE		0.10
72-20-8	Endrin		0.10
33213-65-9	Endosulfan II		0.10
72-54-8	4,4'-DDD		0.10
1031-07-8	Endosulfan Sulfate		0.10
50-29-3	4,4'-DDT		0.10
7421-93-4	Endrin Aldehyde		0.10
53494-70-5	Endrin Ketone	NPTC	0.10
72-43-5	Methoxychlor	NPTC	0.50
5103-71-9	Alpha-Chlordane		0.05
5103-74-2	Gamma-Chlordane		0.05
57-74-9	Chlordane		1.0
8001-35-2	Toxaphene		5.0

CAS	PCB	NQL
12674-11-2	Aroclor-1016	1.0
1104-28-2	Aroclor-1221	1.0
11141-16-5	Aroclor-1232	1.0
53469-21-9	Aroclor-1242	1.0
12672-29-6	Aroclor-1248	1.0
11097-69-1	Aroclor-1254	1.0
11096-82-5	Aroclor-1260	1.0

The "Nominal Quantitation Limit" listed for each target compound is based on the Superfund CLP Protocol. The Actual Quantitation Limits are related to the NQLs by the NQL Factor. This NQL factor reflects procedural steps, e.g., extract dilution, which influence quantitation limits.

ORIGINAL (Red)

Office of Analytical Services and Quality Assurance
Volatile Organics Analysis
Nominal Quantitation Limits (NQL)

Units: Solids = ug/kg (wet) NPTC = Non-Priority Pollutant Target Compound

Actual Quantitation Limit = (NQL Factor) X NQL

CAS	ANALYTE		NQL
75-71-8	Dichlorodifluoromethane		5
74-87-3	Chloromethane		5
75-01-4	Vinyl Chloride		5
74-83-9	Bromomethane		5
75-00-3	Chloroethane		5
75-69-4	Trichlorofluoromethane		5
75-35-4	1,1-Dichloroethylene		5
75-15-0	Carbon Disulfide	NPTC	5
67-64-1	Acetone	NPTC	5
75-09-2	Methylene Chloride		5
156-60-5	trans-1,2-Dichloroethene		5
75-34-3	1,1-Dichloroethane		5
108-05-4	Vinyl Acetate	NPTC	5
590-20-7	2,2-Dichloropropane		5
156-59-4	cis-1,2-Dichloroethene	NPTC	5
78-93-3	2-Butanone	NPTC	5
74-97-5	Bromochloromethane	NPTC	5
65-66-3	Chloroform		5
71-55-6	1,1,1-Trichloroethane		5
56-23-5	Carbon Tetrachloride		5
563-58-6	1,1-Dichloropropene		5
71-43-2	Benzene		5
107-06-2	1,2-Dichloroethane		5
79-01-6	Trichloroethylene		5
78-87-5	1,2-Dichloropropane		5
74-95-3	Dibromomethane	NPTC	5
75-27-4	Bromodichloromethane		5
110-75-8	2-Chloroethylvinyl ether		5
10061-01-6	trans-1,3-Dichloropropene	NPTC	5
108-10-1	4-Methyl-2-pentanone		5
108-83-3	Toluene		5
10061-01-5	cis-1,3-Dichloropropene		5
79-00-5	1,1,2-Trichloroethane		5
127-18-4	Tetrachloroethylene		5

CAS	ANALYTE		NQL
142-28-9	1,3-Dichloropropane	NPTC	5
591-78-6	2-Hexanone	NPTC	5
124-48-1	Dibromochloromethane		5
106-93-4	1,2-Dibromoethane(EDB)	NPTC	5
108-90-7	Chlorobenzene		5
630-20-6	1,1,1,2-Tetrachloroethane	NPTC	5
100-41-4	Ethylbenzene		5
108-38-3	m-Xylene (m & p isomers	NPTC	5
106-42-3	p-Xylene together)	NPTC	5
95-47-6	o-Xylene	NPTC	10
100-42-5	Styrene	NPTC	10
75-25-2	Bromoform		5
98-82-8	Isopropylbenzene	NPTC	5
108-86-1	Bromobenzene	NPTC	5
79-34-5	1,1,2,2-Tetrachloroethane		5
96-18-4	1,2,3-Trichloropropane	NPTC	5
103-65-1	n-Propylbenzene	NPTC	5
95-49-8	2-Chlorotoluene	NPTC	5
106-43-4	4-Chlorotoluene	NPTC	5
108-67-8	1,3,5-Trimethylbenzene	NPTC	5
98-06-6	tert-Butylbenzene	NPTC	5
93-63-6	1,2,4-Trimethylbenzene	NPTC	5
135-98-8	sec-Butylbenzene	NPTC	5
541-73-1	1,3-Dichlorobenzene		5
106-46-7	1,4-Dichlorobenzene		5
99-87-6	p-Isopropyltoluene	NPTC	5
95-50-1	1,2-Dichlorobenzene		5
104-51-8	n-Butylbenzene	NPTC	5
96-12-8	1,2-Dibromo-3-chloropropane		5
120-82-1	1,2,4-Trichlorobenzene		5
91-20-3	Naphthalene		5
87-68-3	Hexachlorobutadiene		5
87-61-6	1,2,3-Trichlorobenzene	NPTC	5

The "Nominal Quantitation Limit" factor is an overall correction factor applied to the method's NQLs for analytical adjustments made during the analysis (i.e., for analyses of more or less than the ideal 5 grams for soil samples, for sample dilutions prior to analysis).

For example, if the NQL factor for an OASQA soil sample is 2, the estimated Actual Quantitation Limit for vinyl chloride would be 10 ug/kg (i.e., 2 x 5 ug/kg).

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ORIGINAL (Red)

Office of Analytical Services and Quality Assurance
Volatile Organics Analysis
Nominal Quantitation Limits (NQL)

Units: Water = ug/L NPTC = Non-Priority Pollutant Target Compound

Actual Quantitation Limit = (NQL Factor) X NQL

CAS	ANALYTE		NQL
75-71-8	Dichlorodifluoromethane		5
74-87-3	Chloromethane		5
75-01-4	Vinyl Chloride		5
74-83-9	Bromomethane		5
75-00-3	Chloroethane		5
75-69-4	Trichlorofluoromethane		5
75-35-4	1,1-Dichloroethylene		5
75-15-0	Carbon Disulfide	NPTC	5
67-64-1	Acetone	NPTC	5
75-09-2	Methylene Chloride		5
156-60-5	trans-1,2-Dichloroethene		5
75-34-3	1,1-Dichloroethane		5
108-05-4	Vinyl Acetate	NPTC	5
590-20-7	2,2-Dichloropropane		5
156-59-4	cis-1,2-Dichloroethene	NPTC	5
78-93-3	2-Butanone	NPTC	5
74-97-5	Bromochloromethane	NPTC	5
65-66-3	Chloroform		5
71-55-6	1,1,1-Trichloroethane		5
56-23-5	Carbon Tetrachloride		5
563-58-6	1,1-Dichloropropene		5
71-43-2	Benzene		5
107-06-2	1,2-Dichloroethane		5
79-01-6	Trichloroethylene		5
78-87-5	1,2-Dichloropropane		5
74-95-3	Dibromomethane	NPTC	5
75-27-4	Bromodichloromethane		5
110-75-8	2-Chloroethylvinyl ether		5
10061-01-6	trans-1,3-Dichloropropene	NPTC	5
108-10-1	4-Methyl-2-pentanone		5
108-83-3	Toluene		5
10061-01-5	cis-1,3-Dichloropropene		5
79-00-5	1,1,2-Trichloroethane		5
127-18-4	Tetrachloroethylene		5

CAS	ANALYTE		NQL
142-28-9	1,3-Dichloropropane	NPTC	5
591-78-6	2-Hexanone	NPTC	5
124-48-1	Dibromochloromethane		5
106-93-4	1,2-Dibromoethane(EDB)	NPTC	5
108-90-7	Chlorobenzene		5
630-20-6	1,1,1,2-Tetrachloroethane	NPTC	5
100-41-4	Ethylbenzene		5
108-38-3	m-Xylene (m & p isomers	NPTC	5
106-42-3	p-Xylene together)	NPTC	5
95-47-6	o-Xylene	NPTC	10
100-42-5	Styrene	NPTC	10
75-25-2	Bromoform		5
98-82-8	Isopropylbenzene	NPTC	5
108-86-1	Bromobenzene	NPTC	5
79-34-5	1,1,2,2-Tetrachloroethane		5
96-18-4	1,2,3-Trichloropropane	NPTC	5
103-65-1	n-Propylbenzene	NPTC	5
95-49-8	2-Chlorotoluene	NPTC	5
106-43-4	4-Chlorotoluene	NPTC	5
108-67-8	1,3,5-Trimethylbenzene	NPTC	5
98-06-6	tert-Butylbenzene	NPTC	5
93-63-6	1,2,4-Trimethylbenzene	NPTC	5
135-98-8	sec-Butylbenzene	NPTC	5
541-73-1	1,3-Dichlorobenzene		5
106-46-7	1,4-Dichlorobenzene		5
99-87-6	p-Isopropyltoluene	NPTC	5
95-50-1	1,2-Dichlorobenzene		5
104-51-8	n-Butylbenzene	NPTC	5
96-12-8	1,2-Dibromo-3-chloropropane		5
120-82-1	1,2,4-Trichlorobenzene		5
91-20-3	Naphthalene		5
87-68-3	Hexachlorobutadiene		5
87-61-6	1,2,3-Trichlorobenzene	NPTC	5

The "Nominal Quantitation Limit" factor is an overall correction factor applied to the method's NQLs for analytical adjustments made during the analysis (i.e., for analyses of less than the ideal 5 mls for aqueous samples, and for sample dilutions prior to analysis).

For example, if the NQL factor for an OASQA water sample is 2, the estimated Actual Quantitation Limit for vinyl chloride would be 10 ug/L (i.e., 2 x 5 ug/L).

Rev. October 16, 1996

ORIGINAL (Red)

Volatile Organic Analysis by GC/MS

Analyst:

Frederick Petraitis
LMES Chemist

Method:

Ten aqueous and fifteen soil samples from the RADFORD ARMY AMMUNITION PLANT (REQ98118) site were analyzed for the presence of volatile organic compounds amenable to purge and trap and identifiable by mass spectrometry. The samples were collected on March 29, 30, 31 and April 1, 1998. These samples were analyzed on April 8, 9 and 10, 1998 using a consolidated method derived from EPA methods SDWA 524.2, NPDES 624, RCRA 8260 and the Superfund CLP Statement of Work.

Only detected results are reported. The nominal quantitation limit (NQL) for each compound is as listed in the attached table(s). Soil samples 980403-33 and 980403-37 were analyzed one day outside of the contractual holding time. The results for soil samples were reported on a **WET** weight basis.

Tentatively Identified Compounds

Site: Radford Army Ammunition Plant
Program: Superfund Federal Facilities

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/Kg)
980403-16		None Detected		

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/Kg)
980403-17		None Detected		

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/Kg)
980403-18		None Detected		

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/L)
980403-19		None Detected		

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/Kg)
980403-20	*******	Unknown m/z=44	30.84	5 T

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Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/Kg)
980403-21		None Detected		

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/L)
980403-22	*******	Unknown m/z=75	13.58	7 T

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/L)
980403-23		None Detected		

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/L)
980403-24		None Detected		

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/Kg)
980403-25		None Detected		

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/Kg)
980403-26		None Detected		

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/Kg)
980403-27	*******	Unknown m/z=73	30.85	7 T

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/Kg)
980403-28		None Detected		

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/Kg)
980403-29		None Detected		

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/Kg)
980403-30		None Detected		

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/Kg)
980403-31		None Detected		

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/Kg)
980403-32	*******	Unknown Alkane m/z=57	34.32	16 T
	*******	Unknown Alkane m/z=57	36.48	22 T

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/Kg)
980403-33	*******	Unknown m/z=68	30.32	22 T

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/L)
980403-34		None Detected		

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Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/L)
980403-35		None Detected		

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/L)
980403-36		None Detected		

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/Kg)
980403-37	624920	Disulfide, dimethyl	21.61	6 T
	*******	Unknown m/z=55	27.09	11 T
	*******	Unknown m/z=57	35.93	5 T

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/L)
980403-38		None Detected		

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/L)
980403-39	*******	Unknown Alcohol m/z=45	11.71	10 T

Sample No.	CAS#	COMPOUND NAME	R.T.	CONC (ug/L)
980403-40		None Detected		

ORIGINAL (Red)

Pesticide/PCB Analysis By Gas Chromatography

Analyst:

Timothy M. Casey
LMES Chemist

Method:

Thirty-eight mixed matrix samples from RADFORD ARMY AMMUNITION PLANT (REQ98118) were analyzed for polychlorinated biphenyls and/or pesticides by capillary column gas chromatography. All extractions and analyses were performed according to SOP R3-QA207.0. This SOP is a consolidated method derived from EPA methods SDWA 508, NPDES 608, RCRA 8081 & 8082, and the Superfund CLP Statement of Work. The samples were collected March 30 and 31; April 1 and 2, 1998; extracted April 2, 6, 8, 9, and 10, 1998; and analyzed April 7, 8, 14, 29, 30; May 1, 2, 3, 4, 7, 8, 9, 10, and 11, 1998. All soil results are reported on a **WET WEIGHT** basis.

Quality Control:

Five of the seventy-six surrogate recoveries were outside the acceptance limit criteria (60-150% recovery). These recoveries have been flagged with an "A". All of the thirty-six matrix spike recoveries and all of the eighteen matrix spike relative percent difference (RPD) values were within the acceptance limits.

Continuing calibration criteria were monitored for target pesticides. Due to sample matrix effects, several calibration check standards did not meet acceptance criteria for select compounds. Where possible, quantitation was performed using a secondary column for these compounds. In cases where target sample analyses were not bracketed by a valid calibration curve or a valid check standard on both columns, results are regarded as estimated and have been qualified with a "J".

Due to the complex nature of the sample matrix, non-target interference peaks may be eluting within pesticide retention time windows. Target analyte results with relative percent difference greater than 25% between the two analytical columns may be considered suspect and have been flagged with an "R".

Due to the presence of polychlorinated biphenyls (PCBs) in several samples, PCB congener peaks may be eluting within pesticide retention time windows. Pesticide results attributed to PCB interference have been flagged with an "I".

The presence of Aroclor 1254 was detected at very low levels in samples 980401-31 and 980403-10. In order to minimize the effects of calibration curve bias near the detection limit,

ORIGINAL (Red)

quantitation was performed using a single point calibration utilizing the low level calibration standard for this Aroclor.

The presence of Aroclor 1254 was detected at elevated concentrations in samples 980403-02, 980403-07, and 980403-15. The presence of polychlorinated biphenyls in these samples was verified using gas chromatography/mass spectrometry Tentatively Identified Compound (TIC) results.

Aqueous samples 980401-29, 980401-33, 98001-35, 980401-36, 980402-14, 980403-22, and 980403-23 were prepared using less than the optimal 1.0 liter extraction volume due to receipt of insufficient sample volume. The nominal quantitation limit factors have been adjusted accordingly.

The nominal quantitation limit factors for these samples are listed below.

Sample	Nominal Quantitation Limit Factor
980401-26	1.00 All Compounds
980401-27	1.00 PCBs 5.00 Pesticides
980401-28	1.00 PCBs 5.00 Pesticides
980401-29	1.18 All Compounds
980401-30	1.00 PCBs 20.0 Pesticides
980401-31	1.00 PCBs 20.0 Pesticides
980401-32	1.00 PCBs 20.0 Pesticides
980401-33	1.23 All Compounds
980401-34	1.00 All Compounds
980401-35	1.25 All Compounds
980401-36	1.25 All Compounds
980402-08	1.00 PCBs 2.00 Pesticides
980402-09	1.00 PCBs 5.00 Pesticides

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Sample	Nominal Quantitation Limit Factor
980402-10	1.00 PCBs 5.00 Pesticides
980402-11	1.00 PCBs 5.00 Pesticides
980402-14	1.56 All Compounds
980403-01	1.00 PCBs 10.0 Pesticides
980403-02	20.0 All Compounds
980403-03	1.00 PCBs 5.00 Pesticides
980403-04	5.00 PCBs 50.0 Pesticides
980403-05	2.00 PCBs 10.0 Pesticides
980403-06	1.00 PCBs 5.00 Pesticides
980403-07	50.0 All Compounds
980403-08	1.00 PCBs 5.00 Pesticides
980403-09	2.00 PCBs 10.0 Pesticides
980403-10	2.00 PCBs 10.0 Pesticides
980403-11	5.00 PCBs 50.0 Pesticides
980403-12	2.00 PCBs 5.00 Pesticides

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Sample	Nominal Quantitation Limit Factor
980403-13	1.00 PCBs 5.00 Pesticides
980403-14	1.00 PCBs 5.00 Pesticides
980403-15	50.0 All Compounds
980403-16	1.00 PCBs 5.00 Pesticides
980403-17	1.00 PCBs 5.00 Pesticides
980403-18	1.00 PCBs 5.00 Pesticides
980403-20	2.00 PCBs 20.0 Pesticides
980403-21	2.00 PCBs 5.00 Pesticides
980403-22	1.52 All Compounds
980403-23	1.69 All Compounds

ORIGINAL (Red)

Semi-volatile Analysis by GC/MS

Analyst:

Hoang Nguyen
LMES Chemist

Method:

Eight aqueous and thirty soil samples from RADFORD ARMY AMMUNITION PLANT (REQ98118) were analyzed for the presence of semi-volatile organic compounds amenable to continuous liquid/liquid and soxhlet extraction and identifiable by mass spectrometry. The samples were collected March 30, 31, April 01 and 02, 1998 and extracted April 02, 06, 08, 09, 10, 22 and May 07, 1998. These samples were analyzed April 09, 15, 21, 28, 30, May 07, 08 and 11, 1998 by a consolidated method derived from EPA methods SDWA 525.2, NPDES 625, RCRA 8270 and the Superfund CLP Statement of Work.

Samples 980401-27 and 980403-09 were reextracted 13 and 25 days outside the technical holding time, respectively, due to low recovery of surrogate spike compounds in the original extract. Sample results were reported from the reprepared samples and should be regarded as estimated only.

Only detected results are reported. The results for soil samples are reported on a **WET** weight basis. There were several samples that required further dilution due to high compound concentrations and shifting retention times. The results obtained from these diluted analyses were qualified "C". The NQL factor for all samples is equal to 1 except for those with insufficient sample volumes provided and those which required dilutions. The samples affected are listed below.

Sample	Extracted Volume	NQL Factor	Compounds
980401-29	840mL	1.19	all
980401-33	770mL	1.30	all
980401-34MS	700mL	1.43	all
980401-34MSD	750mL	1.33	all
980401-35	790mL	1.27	all
980401-36	750mL	1.33	all

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Sample	Dilution	NQL Factor	Compounds
980403-04	5X	5	all except pentachlorophenol
	50X	50	pentachlorophenol
980403-11	20X	20	all except pentachlorophenol
	200X	200	pentachlorophenol
980403-14	5X	5	fluoranthene, pyrene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, indeno[1,2,3-cd]pyrene and benzo[g,h,i]perylene

Tentatively identified compounds (TICs) have been corrected for any blank contamination. It should be noted that PCBs and dioxins were tentatively identified in some of the samples. Further studies or investigations are recommended for confirmation. The TICs are reported below.

TENTATIVELY IDENTIFIED COMPOUNDS

Site: Radford Army Ammunition Plant
Program: Superfund F/F

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980401-26	******	Unknown m/z = 43	05.63	0.3 T
	******	Unknown m/z = 43	08.77	0.2 T
	******	Unknown m/z = 43	09.25	0.3 T
	******	Unknown m/z = 329	23.67	0.5 T
	******	Unknown m/z = 302	31.96	0.1 T
	******	Unknown m/z = 57	32.39	0.1 T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980401-27	3102338	3-Penten-2-one, (E)-	03.46	0.5 T
	******	Unknown m/z = 43	05.40	0.5 T
	******	Unknown m/z = 85	08.52	0.5 T
	******	Unknown m/z = 43	10.21	0.3 T
	******	Unknown m/z = 43	11.57	0.3 T
	******	Unknown alkane m/z = 57	25.95	0.4 T
	******	Unknown m/z = 43	28.26	0.6 T

ORIGINAL (Red)

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980401-27(cont.)	******	Unknown m/z = 43	28.37	0.4 T
	******	Unknown alkane m/z = 57	30.34	0.3 T
	******	Unknown m/z = 43	30.76	0.9 T
	******	Unknown m/z = 43	31.26	5.5 T
	******	Unknown m/z = 69	31.59	0.6 T
	******	Unknown m/z = 43	32.66	0.3 T
	******	Unknown m/z = 59	35.35	0.2 T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980401-28	******	Unknown m/z = 69	03.62	0.4 T
	******	Unknown m/z = 42	03.92	0.4 T
	******	Unknown m/z = 43	05.62	0.4 T
	******	Unknown m/z = 55	07.54	0.3 T
	******	Unknown m/z = 70	31.38	0.2 T
	******	Unknown alkane m/z = 57	32.38	0.1 T

UNITS: µg/L

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980401-29		None Detected		

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980401-30	625332	3-Penten-2-one	03.62	0.2 T
	******	Unknown m/z = 42	03.91	0.3 T
	******	Unknown m/z = 93	09.80	0.2 T
	******	Unknown alkane m/z = 57	22.16	0.2 T
	057103	Hexadecanoic acid	24.84	0.5 T
	******	Unknown m/z = 57	31.03	0.4 T
	******	Unknown m/z = 82	32.00	0.8 T
	******	Unknown alkane m/z = 57	32.40	0.8 T
	******	Unknown m/z = 95	32.80	0.3 T
	******	Unknown alkane m/z = 43	33.06	0.3 T
	******	Unknown m/z = 57	33.37	0.4 T
	******	Unknown alkane m/z = 57	33.77	0.4 T
	******	Unknown m/z = 83	33.93	0.3 T
	******	Unknown m/z = 165	34.22	0.2 T
	******	Unknown m/z = 43	34.99	0.4 T
	******	Unknown m/z = 55	36.08	0.3T
	******	Unknown m/z = 218	36.24	0.5T

ORIGINAL (Red)

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980401-31	******	Unknown m/z = 69	03.62	0.2T
	******	Unknown m/z = 42	03.92	0.3T
	******	Unknown m/z = 43	05.64	0.2T
	******	Unknown m/z = 107	06.74	0.4T
	******	Unknown alkane m/z = 57	22.16	0.6T
	057103	Hexadecanoic acid	24.83	0.3T
	******	Unknown m/z = 124	30.14	0.7T
	******	Unknown m/z = 57	31.03	0.4T
	******	Unknown m/z = 43	31.27	0.2T
	******	Unknown m/z = 57	31.99	0.7T
	******	Unknown m/z = 95	32.16	0.3T
	******	Unknown alkane m/z = 57	32.40	0.4T
	628664	Octadecanal	33.37	0.4T
	******	Unknown alkane m/z = 57	33.76	0.4T
	******	Unknown m/z = 83	33.95	0.2T
	******	Unknown m/z = 191	34.44	0.2T
	******	Unknown m/z = 57	43.98	0.2T
	******	Unknown m/z = 81	36.07	0.2T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980401-32	3102338	3-Penten-2-one, (E)	03.61	0.6T
	******	Unknown m/z = 135	21.10	2.4T
	28994414	Phenol, 2-(phenylmethyl)-	22.07	9.0T
	******	Unknown m/z = 142	22.50	0.9T
	******	Unknown m/z = 135	22.77	0.6T
	620053	Benzene, (iodomethyl)-	23.04	1.3T
	120321	Clorophene	24.36	0.9T
	******	Unknown m/z = 174	24.76	0.5T
	057103	Hexadecanoic acid	24.87	1.2T
	10544500	Sulfur, mol. (S8)	25.88	2.9T
	******	Unknown m/z = 229	30.38	0.9T
	******	Unknown alkane m/z = 57	32.40	1.0T
	******	Unknown alkane m/z = 57	33.78	0.8T
	******	Unknown m/z = 43	33.97	2.8T
	******	Unknown m/z = 165	34.26	4.2T
	******	Unknown m/z = 43	34.38	1.2T
	******	Unknown m/z = 231	34.66	1.2T
	******	Unknown m/z = 43	35.19	0.8T
	******	Unknown m/z = 158	35.73	4.4T
	******	Unknown m/z = 43	36.14	2.7T

ORIGINAL (Red)

UNITS: µg/L

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980401-33	******	Unknown m/z = 55	05.04	3 T
	******	Unknown m/z = 43	18.68	160 T
	******	Unknown m/z = 43	20.57	3 T

UNITS: µg/L

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980401-34	******	Unknown m/z = 43	18.69	150 T
	******	Unknown m/z = 43	20.58	4 T

UNITS: ug/L

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980401-35	******	Unknown m/z = 69	04.23	13 T
	33966506	2-Butanamine, (.+/-.)-	04.80	4 T

UNITS: ug/L

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980401-36	******	Unknown alkane m//z = 57	03.89	4 T
	******	Unknown m/z = 69	04.21	10 T
	******	Unknown m/z = 73	04.80	3 T
	******	Unknown m/z = 185	31.80	6 T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980402-08	******	Unknown m/z = 106	03.59	0.2 T
	******	Unknown m/z = 55	07.54	0.2 T
	******	Unknown phenol, m/z = 175	28.17	0.2 T
	******	Unknown m/z = 43	30.25	0.3 T
	******	Unknown m/z = 59	31.70	1.3 T
	******	Unknown m/z = 57	31.99	0.5 T
	******	Unknown m/z = 232	32.19	2.2 T
	******	Unknown alkane m/z = 57	32.39	0.2 T
	******	Unknown m/z = 205	32.76	0.4 T
	******	Unknown alkane m/z = 57	33.05	0.5 T
	******	Unknown m/z = 57	33.36	0.4 T
	******	Unknown alkane m/z = 57	33.75	0.2 T
	******	Unknown m/z = 57	34.97	0.2 T

ORIGINAL (Red)

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980402-09	******	Unknown m/z = 69	17.46	0.3 T
	******	Unknown m/z = 253	31.69	0.2 T
	******	Unknown m/z = 57	31.98	0.6 T
	******	Unknown m/z = 268	32.23	0.2 T
	******	Unknown PNA m/z = 252	32.34	0.7 T
	******	Unknown m/z = 266	32.71	0.2 T
	******	Unknown m/z = 43	32.79	0.2 T
	******	Unknown m/z = 266	32.91	0.2 T
	******	Unknown alkane m/z = 57	33.04	0.2 T
	******	Unknown m/z = 266	33.13	0.3 T
	******	Unknown m/z = 57	33.35	0.3 T
	******	Unknown m/z = 264	33.43	0.3 T
	******	Unknown alkane m/z = 57	33.75	0.4 T
	******	Unknown m/z = 59	33.94	0.3 T
	******	Unknown m/z = 279	34.30	0.3 T
	******	Unknown PNA m/z = 278	34.56	0.3 T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980402-10	******	Unknown m/z = 69	03.62	0.6 T
	******	Unknown m/z = 43	05.67	0.3 T
	******	Unknown m/z = 55	07.54	0.2 T
	******	Unknown m/z = 55	24.65	0.4 T
	057103	Hexadecanoic acid	24.83	0.2 T
	******	Unknown m/z = 69	31.95	0.2 T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980402-11	3102338	3-Penten-2-one, (E)-	03.59	1.2 T
	******	Unknown m/z = 69	05.09	2.5 T
	******	Unknown m/z = 43	05.54	0.6 T
	******	Unknown m/z = 41	05.99	2.0 T
	******	Unknown m/z = 85	08.60	0.8 T
	******	Unknown m/z = 43	10.28	0.6 T
	******	Unknown m/z = 55	24.56	0.8 T
	******	Unknown m/z = 55	24.64	0.6 T
	057103	Hexadecanoic acid	24.75	1.0 T
	******	Unknown m/z = 55	26.42	0.7 T
	******	Unknown m/z = 57	31.86	0.6 T
	******	Unknown alkane m/z = 57	32.26	0.2 T
	******	Unknown alkane m/z = 57	32.93	0.2 T

ORIGINAL (Red)

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980402-11(cont.)	******	Unknown m/z = 57	33.22	0.2T
	******	Unknown alkane m/z = 57	33.61	0.4T

UNITS: µg/L

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980402-14		None Detected		

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-01	******	Unknown m/z = 43	06.20	3.4T
	******	Unknown m/z = 43	06.70	0.5T
	******	Unknown m/z = 43	11.63	0.5T
	******	Unknown alkane m/z = 91	18.43	0.5T
	077532	Cedrol	21.04	0.9T
	******	Unknown m/z = 329	23.53	0.5T
	057103	Hexadecanoic acid	24.74	0.7T
	******	Unknown m/z = 84	26.42	0.5T
	******	Unknown m/z = 271	27.79	0.4T
	******	Unknown m/z = 175	28.04	1.3T
	******	Unknown m/z = 202	28.12	0.4T
	******	Unknown m/z = 57	31.85	0.5T
	******	Unknown alkane m/z = 57	32.26	1.1T
	******	Unknown m/z = 57	33.23	0.4T
	******	Unknown alkane m/z = 57	33.62	1.9T
	******	Unknown m/z = 83	33.74	0.6T
	******	Unknown m/z = 165	34.04	0.4T
	******	Unknown m/z = 57	34.82	0.4T
	******	Unknown alkane m/z = 57	35.29	0.6T
	******	Unknown m/z = 438	35.92	2.2T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-02	******	Unknown m/z = 43	06.22	3.7T
	******	Unknown alkane m/z = 43	06.68	0.5T
	******	Unknown m/z = 108	18.20	0.4T
	475207	1,4-Methanoazulene, decahydro-4,8,8-	18.48	3.3T
	******	Unknown m/z = 161	18.55	0.7T
	******	Unknown m/z = 119	18.80	0.6T
	16982006	Benzene, 1-methyl-4-(1,2,2-trimethyl-)	19.79	0.4T
	******	Unknown m/z = 95	21.08	2.6T
	******	Unknown m/z = 135	21.35	1.6T

ORIGINAL (Red)

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-02(cont.)	057103	Hexadecanoic acid	24.77	1.0T
	511159	2-Phenanthrenol, 4b,5,6,7,8,8a,9,10-	27.82	0.6T
	******	Unknown m/z = 175	28.09	2.4T
	******	Unknown m/z = 202	28.16	0.8T
	******	Unknown m/z = 202	30.94	0.5T
	******	Unknown alkane m/z = 57	31.58	0.4T
	******	Unknown m/z = 57	31.87	0.4T
	******	Unknown m/z = 57	32.61	0.4T
	******	Unknown alkane m/z = 57	33.64	2.2T
	******	Unknown alkane m/z = 57	35.31	0.8T
	******	Unknown m/z = 43	35.92	1.7T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-03	******	Unknown m/z = 43	05.50	0.9T
	******	Unknown m/z = 43	06.29	9.6T
	******	Unknown m/z = 43	06.70	0.6T
	******	Unknown m/z = 69	17.45	0.8T
	******	Unknown m/z = 55	24.58	0.6T
	******	Unknown m/z = 55	24.68	0.6T
	057103	Hexadecanoic acid	24.81	1.6T
	******	Unknown m/z = 55	26.46	1.2T
	******	Unknown m/z = 82	31.88	1.4T
	******	Unknown alkane m/z = 57	32.31	3.4T
	******	Unknown m/z = 83	32.38	0.5T
	******	Unknown m/z = 57	32.62	0.6T
	******	Unknown alkane m/z = 57	32.94	0.5T
	******	Unknown m/z = 82	33.25	1.1T
	******	Unknown alkane m/z = 57	33.67	4.2T
	059029	Vitamin E	34.07	0.7T
	******	Unknown m/z = 57	34.84	1.1T
	******	Unknown alkane m/z = 57	35.32	0.7T
	******	Unknown m/z = 55	34.70	0.5T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-04	******	Unknown m/z = 43	06.03	4.2T
	100527	Benzaldehyde	09.25	9.9T
	******	Unknown m/z = 107	19.99	3.8T
	******	Unknown tetrachlorophenol m/z = 232	20.35	3.5T
	******	Unknown m/z = 57	20.93	1.8T

ORIGINAL (Red)

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-04(cont.)	******	Unknown alkane m/z = 57	22.02	24 T
	******	Unknown alkane m/z = 57	22.46	5.6 T
	******	Unknown alkane m/z = 57	23.17	6.8 T
	******	Unknown m/z = 68	23.48	4.2 T
	******	Unknown m/z = 95	24.38	3.8 T
	******	Unknown m/z = 73	24.78	2.0 T
	******	Unknown m/z = 73	28.35	6.9 T
	******	Unknown m/z = 82	31.84	7.9 T
	******	Unknown m/z = 57	32.24	5.1 T
	******	Unknown m/z = 424	32.63	2.1 T
	******	Unknown m/z = 390	32.73	2.4 T
	******	Unknown m/z = 390	32.81	1.9 T
	******	Unknown alkane m/z = 57	32.89	3.1 T
	******	Unknown m/z = 82	33.20	3.6 T
	******	Unknown alkane m/z = 57	33.60	12T
	3268879	Dibenzo[b,e][1,4]dioxin, octachloro-	34.47	5.2T
	******	Unknown alkane m/z = 57	35.23	5.0T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-05	******	Unknown m/z = 43	06.24	4.1 T
	******	Unknown m/z = 43	06.70	0.5 T
	******	Unknown m/z = 43	08.58	0.4T
	******	Unknown m/z = 69	17.43	0.6T
	******	Unknown m/z = 55	24.55	0.4T
	057103	Hexadecanoic acid	24.76	0.9T
	******	Unknown m/z = 55	26.45	0.4T
	******	Unknown m/z = 124	29.53	0.8T
	******	Unknown m/z = 93	30.90	0.4T
	******	Unknown m/z = 59	31.50	0.4T
	******	Unknown m/z = 82	31.86	0.3T
	******	Unknown m/z = 43	33.23	0.5T
	******	Unknown alkane m/z = 57	33.63	2.3T
	******	Unknown m/z = 83	33.73	1.0T
	059029	Vitamin E	34.05	0.6T
	******	Unknown m/z = 57	34.82	0.3T
	******	Unknown m/z = 43	35.19	0.6T
	******	Unknown alkane m/z = 57	35.30	0.8T
	******	Unknown m/z = 59	35.56	0.4T
	083476	.gamma.-Sitosterol	35.91	2.2T

ORIGINAL (Red)

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-06	******	Unknown m/z = 43	06.26	6.7T
	******	Unknown m/z = 43	06.68	1.1T
	******	Unknown m/z = 43	08.60	0.6T
	100527	Benzaldehyde	0.933	1.4T
	******	Unknown m/z = 69	17.46	0.9T
	1002842	Pentadecanoic acid	23.38	0.5T
	******	Unknown m/z = 55	24.55	0.6T
	******	Unknown m/z = 55	24.66	0.5T
	057103	Hexadecanoic acid	24.81	1.9T
	******	Unknown m/z = 55	26.47	0.7T
	******	Unknown m/z = 43	30.90	0.7T
	******	Unknown m/z = 43	31.40	0.5T
	******	Unknown alkane m/z = 57	31.58	0.5T
	******	Unknown m/z = 57	31.87	0.6T
	******	Unknown m/z = 57	33.24	0.7T
	******	Unknown alkane m/z = 57	33.64	2.8T
	******	Unknown m/z = 83	33.74	1.3T
	059029	Vitamin E	34.06	0.9T
	******	Unknown alkane m/z = 57	35.30	0.9T
	083476	.gamma.-Sitosterol	35.92	2.8T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-07	******	Unknown m/z = 43	05.50	0.6T
	******	Unknown m/z = 43	06.29	9.2T
	******	Unknown m/z = 43	06.69	1.0T
	******	Unknown m/z = 69	17.45	0.8T
	******	Unknown m/z = 55	24.57	0.5T
	******	Unknown m/z = 55	24.67	0.7T
	057103	Hexadecanoic acid	24.80	1.7T
	******	Unknown m/z = 55	26.46	0.6T
	******	Unknown m/z = 43	31.39	0.5T
	******	Unknown alkane m/z = 57	31.58	0.5T
	******	Unknown m/z = 82	31.86	0.7T
	******	Unknown alkane m/z = 57	32.28	2.6T
	******	Unknown m/z = 153	32.57	0.6T
	******	Unknown alkane m/z = 57	32.93	0.6T
	******	Unknown m/z = 57	33.23	0.7T
	******	Unknown alkane m/z = 57	33.64	3.2T
	******	Unknown m/z = 165	34.05	0.6T
	******	Unknown alkane m/z = 57	35.31	1.0T

ORIGINAL (Red)

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-07(cont.)	083476	.gamma.-Sitosterol	35.94	3.5T
	******	Unknown m/z = 189	36.19	0.8T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-08	******	Unknown m/z = 43	05.48	0.4T
	******	Unknown m/z = 43	06.24	7.1T
	******	Unknown m/z = 41	06.47	0.4T
	******	Unknown m/z = 43	06.67	0.9T
	******	Unknown m/z = 57	06.86	1.2T
	******	Unknown m/z = 43	08.59	0.7T
	******	Unknown m/z = 43	10.29	0.4T
	******	Unknown m/z = 43	11.65	0.3T
	******	Unknown m/z = 55	19.31	0.4T
	******	Unknown m/z = 55	22.25	1.3T
	******	Unknown alkane m/z = 57	32.99	0.8T
	******	Unknown m/z = 82	33.30	1.2T
	******	Unknown alkane m/z = 57	33.71	3.7T
	******	Unknown m/z = 135	33.78	2.9T
	059029	Vitamin E	34.12	0.6T
	******	Unknown m/z = 191	34.35	0.5T
	******	Unknown alkane m/z = 57	34.44	0.6T
	******	Unknown m/z = 82	34.86	0.4T
	******	Unknown m/z = 59	35.60	0.8T
	******	Unknown m/z = 43	35.95	2.0T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-09	******	Unknown m/z = 43	05.37	0.6T
	******	Unknown m/z = 69	23.82	0.6T
	******	Unknown m/z = 55	24.47	0.9T
	******	Unknown m/z = 55	24.55	0.5T
	084651	9,10-Anthracenedione	24.91	0.7T
	******	Unknown m/z = 71	26.12	0.5T
	057114	Octadecanoic acid	26.51	0.8T
	******	Unknown m/z = 216	27.36	0.8T
	******	Unknown alkane m/z = 57	27.65	1.0T
	35065271	1,1'-Biphenyl, 2,2',4,4',5,5'-hexachloro-	27.84	0.8T
	******	Unknown m/z = 81	28.22	1.5T
	******	Unknown m/z = 230	28.35	0.5T
	******	Unknown alkane m/z = 57	30.76	0.8T

ORIGINAL (Red)

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-09(cont.)	******	Unknown m/z = 69	31.72	1.1 T
	******	Unknown alkane m/z = 57	32.81	0.6 T
	******	Unknown alkane m/z = 57	33.50	5.7 T
	******	Unknown m/z = 83	33.60	2.2T
	******	Unknown m/z = 165	33.90	0.8T
	******	Unknown alkane m/z = 57	35.10	1.3 T
	******	Unknown m/z = 43	35.71	2.5T
	******	Unknown m/z = 218	36.20	0.7T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-10	******	Unknown m/z = 83	04.97	0.7 T
	******	Unknown m/z = 43	06.25	4.1 T
	******	Unknown m/z = 43	06.48	0.5 T
	******	Unknown m/z = 43	06.72	1.2 T
	******	Unknown m/z = 43	08.60	0.8 T
	******	Unknown m/z = 43	09.41	0.7 T
	******	Unknown m/z = 43	10.69	0.6 T
	******	Unknown m/z = 69	17.51	0.5 T
	475207	1,4-Methanoazulene, decahydro-4,8,8-	18.45	0.6 T
	077532	Cedrol	21.06	0.8 T
	057103	Hexadecanoic acid	24.77	0.6 T
	******	Unknown m/z = 55	26.43	0.6 T
	511159	2-Phenanthrenol, 4b,5,6,7,8,8a,9,10-	28.07	1.9 T
	******	Unknown m/z = 124	29.63	0.4 T
	******	Unknown m/z = 82	31.87	1.3 T
	******	Unknown m/z = 79	33.01	0.5 T
	******	Unknown m/z = 57	33.24	0.7 T
	******	Unknown alkane m/z = 57	33.63	0.9 T
	******	Unknown m/z = 204	35.12	1.6 T
	******	Unknown alkane m/z = 57	35.29	0.4 T
	******	Unknown m/z = 43	35.86	0.8 T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-11	******	Unknown m/z = 43	06.04	3.7 T
	******	Unknown tetrachlorophenol m/z = 232	20.24	5.0 T
	******	Unknown tetrachlorophenol m/z = 232	20.35	5.9 T
	******	Unknown m/z = 69	21.21	3.4 T
	******	Unknown m/z = 69	21.67	9.3 T

ORIGINAL (Red)

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-11(cont.)	******	Unknown m/z = 81	21.95	8.6T
	******	Unknown m/z = 265	22.34	11T
	******	Unknown m/z = 69	23.24	2.6T
	******	Unknown m/z = 69	23.55	26T
	******	Unknown m/z = 55	23.95	50T
	******	Unknown m/z = 69	24.45	54T
	******	Unknown m/z = 57	24.76	23T
	******	Unknown m/z = 55	25.06	9.5T
	******	Unknown m/z = 55	25.42	50T
	******	Unknown m/z = 119	25.64	12T
	******	Unknown m/z = 124	26.29	140T
	******	Unknown m/z = 123	31.93	6.9T
	******	Unknown m/z = 218	33.20	30T
	******	Unknown m/z = 191	33.62	90T
	******	Unknown m/z = 191	34.26	15T
	3268879	Dibenzo[b,e][1,4]dioxin, octachloro-	34.47	52T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-12	******	Unknown m/z = 43	05.53	0.4T
	******	Unknown m/z = 43	06.27	5.8T
	******	Unknown m/z = 43	06.48	0.4T
	******	Unknown m/z = 43	06.72	1.0T
	******	Unknown m/z = 85	08.61	0.7T
	******	Unknown m/z = 43	09.40	0.5T
	******	Unknown m/z = 55	24.64	0.3T
	057103	Hexadecanoic acid	24.75	0.8T
	******	Unknown m/z = 43	31.00	0.4T
	******	Unknown alkane m/z = 57	31.58	0.5T
	******	Unknown m/z = 57	31.87	1.0T
	******	Unknown m/z = 57	32.55	0.6T
	******	Unknown m/z = 266	32.77	0.3T
	******	Unknown m/z = 57	32.93	0.4T
	******	Unknown m/z = 43	33.05	0.4T
	******	Unknown m/z = 57	33.23	0.6T
	******	Unknown alkane m/z = 57	33.63	1.2T
	******	Unknown m/z = 59	33.80	0.4T
	******	Unknown m/z = 57	34.80	0.3T
	******	Unknown m/z = 204	35.12	1.4T

ORIGINAL (Red)

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-13	3102338	3-Penten-2-one, (E)-	03.62	0.2 T
	******	Unknown m/z = 43	05.63	0.9 T
	******	Unknown m/z = 57	06.02	0.3 T
	******	Unknown m/z = 43	06.41	13 T
	******	Unknown m/z = 85	08.73	0.6 T
	******	Unknown m/z = 43	10.40	0.5 T
	******	Unknown m/z = 69	17.45	0.3 T
	******	Unknown m/z = 55	24.74	0.7T
	057103	Hexadecanoic acid	24.85	0.8 T
	******	Unknown m/z = 57	31.99	1.5 T
	******	Unknown m/z = 57	32.67	0.5 T
	******	Unknown m/z = 57	33.36	0.5 T
	******	Unknown alkane m/z = 57	33.76	1.0 T
	******	Unknown m/z = 57	34.97	0.3 T
	******	Unknown alkane m/z = 57	35.46	0.4 T
	******	Unknown m/z = 191	36.05	0.4 T
	******	Unknown m/z = 218	36.21	0.3 T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-14	******	Unknown m/z = 69	05.05	1.1 T
	******	Unknown m/z = 43	05.53	0.5 T
	******	Unknown m/z = 41	06.01	0.6 T
	******	Unknown m/z = 85	08.60	1.2 T
	******	Unknown m/z = 43	10.28	0.5 T
	057103	Hexadecanoic acid	24.76	0.8 T
	******	Unknown PNA m/z = 216	27.27	0.5 T
	1090137	5,12-Naphthacenedione	31.02	0.5 T
	******	Unknown PNA m/z = 253	31.41	0.9 T
	******	Unknown m/z = 82	31.89	1.1 T
	******	Unknown PNA m/z = 252	32.29	2.8 T
	******	Unknown PNA m/z = 252	32.53	1.3 T
	******	Unknown m/z = 266	32.64	0.9 T
	******	Unknown m/z = 266	32.83	0.6 T
	******	Unknown m/z = 266	33.05	0.5T
	******	Unknown alkane m/z = 57	33.63	0.5T
	******	Unknown alkane m/z = 278	35.03	0.6T

ORIGINAL (Red)

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-15	******	Unknown m/z = 69	05.08	2.5 T
	******	Unknown m/z = 43	05.57	1.1 T
	******	Unknown m/z = 41	06.05	1.4 T
	******	Unknown m/z = 59	06.56	1.2 T
	******	Unknown m/z = 85	08.61	1.2 T
	******	Unknown biphenyl m/z = 292	24.71	0.8 T
	057103	Hexadecanoic acid	24.82	1.2 T
	******	Unknown biphenyl m/z = 326	26.51	1.1 T
	******	Unknown biphenyl m/z = 326	27.12	1.1 T
	******	Unknown biphenyl m/z = 326	27.61	1.7 T
	******	Unknown biphenyl m/z = 360	28.01	1.7 T
	******	Unknown biphenyl m/z =360	28.52	1.2 T
	******	Unknown m/z = 82	31.88	1.9 T
	******	Unknown alkane m/z = 57	32.29	2.2 T
	******	Unknown alkane m/z = 57	33.64	5.6 T
	******	Unknown m/z = 165	34.06	0.9 T
	******	Unknown m/z = 57	35.30	1.2 T
	083476	.gamma.-Sitosterol	35.93	2.2T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-16	3102338	3-Penten-2-one, (E)-	03.46	1.2 T
	******	Unknown m/z = 69	04.95	3.6 T
	******	Unknown m/z = 43	05.41	0.5 T
	******	Unknown m/z = 41	05.81	3.1 T
	******	Unknown m/z = 85	08.51	0.5 T
	******	Unknown m/z = 43	10.21	0.6 T
	******	Unknown m/z = 55	24.53	2.6 T
	057103	Hexadecanoic acid	24.70	1.1 T
	******	Unknown m/z = 55	25.88	0.4 T
	******	Unknown m/z = 69	31.60	1.9 T
	******	Unknown m/z = 55	32.47	0.4 T
	******	Unknown m/z = 43	33.16	0.7 T
	******	Unknown alkane m/z = 57	33.55	0.4 T
	******	Unknown m/z = 165	33.98	0.5 T
	******	Unknown m/z = 95	34.60	0.8 T

ORIGINAL (Red)

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-17	3102338	3-Penten-2-one, (E)-	03.45	0.9T
	******	Unknown m/z = 69	04.92	3.5T
	******	Unknown m/z = 43	05.40	0.4T
	******	Unknown m/z = 41	05.79	1.8T
	******	Unknown m/z = 43	06.39	0.6T
	******	Unknown m/z = 85	08.51	0.6T
	******	Unknown m/z = 43	10.21	0.7T
	******	Unknown m/z = 73	22.62	0.4T
	******	Unknown m/z = 55	24.56	5.2T
	057103	Hexadecanoic acid	24.74	2.5T
	10544500	Sulfur, mol. (S8)	25.68	2.8T
	******	Unknown m/z = 55	25.89	0.4T
	******	Unknown m/z = 79	27.85	0.8T
	******	Unknown alkane m/z = 57	33.55	0.6T
	******	Unknown alkane m/z = 57	35.20	0.4T
	******	Unknown m/z = 55	35.74	0.5T
	******	Unknown alkane m/z = 218	35.89	0.3T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-18	2102338	3-Penten-2-one, (E)-	03.45	0.5T
	******	Unknown m/z = 69	04.97	5.0T
	******	Unknown m/z = 43	05.44	1.9T
	******	Unknown m/z = 41	05.81	1.2T
	******	Unknown m/z = 41	05.89	2.9T
	******	Unknown m/z = 43	06.41	0.8T
	******	Unknown m/z = 43	08.13	0.5T
	******	Unknown m/z = 85	08.52	0.8T
	******	Unknown m/z = 43	10.22	0.8T
	******	Unknown m/z = 55	24.48	0.5T
	057103	Hexadecanoic acid	24.67	0.7T
	******	Unknown m/z = 43	25.09	0.4T
	******	Unknown m/z = 55	26.37	0.6T
	******	Unknown m/z = 43	27.08	0.4T
	******	Unknown m/z = 57	27.70	0.4T
	******	Unknown m/z = 55	29.36	0.4T
	******	Unknown alkane m/z = 57	33.55	0.4T

ORIGINAL (Red)

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-20	******	Unknown m/z = 43	05.43	1.2T
	******	Unknown m/z = 43	11.64	0.9T
	475207	1,4-Methanoazulene, decahydro-4,8,8-	18.34	1.7T
	******	Unknown m/z = 119	18.44	1.2T
	077532	Cedrol	20.96	1.6T
	******	Unknown m/z = 55	24.61	1.8T
	******	Unknown m/z = 55	26.38	2.8T
	057114	Octadecanoic acid	26.53	0.8T
	511159	2-Phenanthrenol, 4b,5,6,7,8,8a,9,10-	27.73	1.7T
	******	Unknown m/z = 175	27.99	3.6T
	******	Unknown m/z = 202	28.07	1.7T
	******	Unknown m/z = 69	31.74	0.8T
	******	Unknown alkane m/z = 57	32.18	1.3T
	******	Unknown m/z = 57	32.25	0.8T
	******	Unknown alkane m/z = 57	33.52	1.5T
	******	Unknown alkane m/z = 57	35.16	0.9T
	******	Unknown m/z = 43	35.76	1.7T

UNITS: mg/Kg

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-21	3102338	3-Penten-2-one, (E)-	03.46	0.3T
	******	Unknown m/z = 43	03.69	0.3T
	108883	Toluene	04.02	0.3T
	******	Unknown m/z = 43	05.40	0.6T
	******	Unknown m/z = 57	05.81	0.5T
	******	Unknown m/z = 43	06.17	9.3T
	******	Unknown m/z = 43	06.40	0.9T
	******	Unknown m/z = 43	06.64	1.1T
	******	Unknown m/z = 85	08.52	0.6T
	******	Unknown m/z = 329	23.48	0.6T
	******	Unknown m/z = 55	24.56	0.3T
	057103	Hexadecanoic acid	24.67	0.6T
	******	Unknown m/z = 55	27.63	0.3T
	******	Unknown m/z = 218	29.05	0.4T
	******	Unknown m/z = 57	31.81	0.6T
	******	Unknown m/z = 59	32.71	0.3T
	******	Unknown m/z = 69	32.92	0.4T
	******	Unknown m/z = 57	33.17	0.3T
	******	Unknown alkane m/z = 57	33.55	0.5T
	******	Unknown m/z = 69	35.73	0.3T

ORIGINAL (Red)

UNITS: µg/L

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-22	******	Unknown m/z = 83	04.71	4 T
	******	Unknown m/z = 73	04.77	6 T
	******	Unknown m/z = 55	05.04	4 T
	******	Unknown m/z = 75	05.26	4 T
	******	Unknown m/z = 77	05.61	14 T

UNITS: µg/L

SAMPLE NO.	CAS #	TIC NAME	RT	CONC.
980403-23	096344	Acetic acid, chloro-,methyl ester	04.12	11 T
	******	Unknown m/z = 75	05.25	7 T
	******	Unknown m/z = 132	10.20	22 T
	******	Unknown m/z = 132	15.07	16 T
	******	Unknown m/z = 55	24.80	0.4 T

ORIGINAL (Red)

Region III, Office of Analytical Services and Quality Assurances
Annapolis, Maryland
HAZARD AND RISK-EXPOSURE DATA SHEET
LEVELS OF PERSONAL PROTECTION DURING SAMPLING

BACKGROUND

Under the authority Section 104 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) of 1980, Section 311 of the Clean Water Act, and Subtitle I of the Resource Conservation and Recovery Act (RCRA), EPA has been delegated the responsibility to undertake response actions with respect to the release or potential release of oil, petroleum, or hazardous substances that pose a substantial threat to human health or welfare, or the environment.

GENERAL

This form is to be used when collecting Environmental Samples (i.e. streams, farm ponds, wells, soils etc.) and for Hazardous Sample (i.e. drums, storage tanks, lagoons, leachates, hazardous waste sites). This information is intended for use as a guide for the safe handling of these laboratory samples in accordance with EPA and OSHA regulations. The sample classification(s) and levels of personal protection used by the sampler in all situations will enable the analyst to be better aware of potential exposure to substances in air, splashes of liquids, or other direct contact with material due to work being done.

DEGREE OF PROTECTION

____ Level A: Highest level of respiratory, skin, and eye protection needed. Fully encapsulated suit, respirator self-contained (Tank type).

____ Level B: Highest level of respiratory protection but lesser level of skin protection needed. Chemical suit, respirator self-contained (Tank type).

____ Level C: Lesser level of respiratory protection than Level B. Skin protection criteria are similar to Level B. Chemical suit, canister respirator/cartridge

X Level D: Work uniform without any respirator or skin hazards. Lab coat, gloves etc.

CLASSIFIED FIELD SAMPLES

X Environmental ____ Hazardous ____ Comb. (Env. & Haz.) ____ Radioactive

Site Name: RADFORD ARMY AMMUNITION PLANT Sampling Date: ~~3-30-98~~ 4-1-98 3-31-98

Sta No. SW-07, REMAINING ARE SOLIDS, ____, ____, ____, ____

Field pH: 7.64, ____, ____, NA, ____, ____, ____, ____, ____, ____, ____
(must be taken prior to submission of aqueous samples)

Sampler: CATHY DARE Work Phone Number: (610) 771-0591

Personal observations at time of sampling (surroundings): OPEN AREA SAMPLING, NO DISCOLORATION OF SURROUNDINGS OR DISTRESSED VEGETATION OBSERVED

Sample collection observations (physical sample, odors etc.): NO OBVIOUS PHYSICAL CHARACTERISTICS OF CONCERN

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

FY 98089
REQ 98118

CHAIN OF CUSTODY RECORD

REGION 3
841 Chestnut St.
Philadelphia, Pennsylvania 19107

Sheet 6C

PROJ. NO.: 13-2864
PROJECT NAME: Radford Army Ammunition Plant

SAMPLERS: (Signature) Catherine Dare, Mark D. LaGatta, Catherine Palmer Dare

U.S. OASQA(CEL) Lab
839 Bestgate Road
Annapolis, MD 21401
Attn: Arnold Turner

	STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TCL BNA 4 oz Amber	TCL Pest/PCB 4 oz Amber	TCL BNA 1L Amber	TCL Pest/PCB 1L Amber	REMARKS	Tag #
	TEMPERATURE BLANK						1						3-2296904
6	SS-08a	3/30/98	1350		X	Area D Rail Yard	1	1		98040126			3-2296906
	↓	↓	↓		↓	↓	1		1				3-2296907
7	SL-08	3/30/98	1345		X	Area D Rail Yard	1	1		98040127			3-2296909
	↓	↓	↓		↓	↓	1		1				3-2296910
8	SL-108	3/30/98	1355		X	Area D Rail Yard	1	1		98040128		Duplicate of SL-08	3-2296911
	↓	↓	↓		↓	↓	1		1			Duplicate of SL-08	3-2296912
9	WW-04	3/30/98	1205		X	Area D Rail Yard	1			98040129			3-2296913
	↓	↓	↓		↓	↓	1				1		3-2296914
0	SL-10	3/30/98	1830		X	Area H Bag Loading	1	1		98040130			3-2296915
	↓	↓	↓		↓	↓	1		1				3-2296916
31	SL-110	3/30/98	1840		X	Area H Bag Loading	1	1		98040131		Duplicate of SL-10	3-2296917
	↓	↓	↓		↓	↓	1		1			Duplicate of SL-10	3-2296918
32	SL-11	3/30/98	1750		X	Area H Bag Loading	1	1		98040132			3-2296921
	↓	↓	↓		↓	↓	1		1				3-2296922

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Mary J. Poupotage	3-31-98 2000				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
			4/1/98 0920	FED EX AIRBILL: 805669742307 ~~805669742329~~	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

ORIGINAL (Red)

3 16348

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

F98089
R2Q98U8

Shelf - OC

CHAIN OF CUSTODY RECORD

REGION 3
841 Chestnut St.
Philadelphia, Pennsylvania 19107

PROJ. NO.: 13-286Y
PROJECT NAME: Radford Army Ammunition Plant
SAMPLERS: (Signature) Catherine Dare, Catherine Dare, Mark D. LaGatta

U.S. OASQA(CRL) Lab
839 Bestgate Road
Annapolis, MD 21401
Attn: Arnold Turner

	STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TCL BNA 1L Amber	TCL Pest/PCB 1L Amber						REMARKS	Tag #
33	WW-106	3/30/98	1655		X	Area H - Bag Loading	1	1		9	8	0	4	0	Duplicate of WW-06	3-2296919
	↓	↓	↓		↓	↓	1		1						Duplicate of WW-06	3-2296920
34	WW-06	3/30/98	1645		X	Area H - Bag Loading	3	3		9	8	0	4	0	MS/MSD	3-2296923 thru 3-2296925
	↓	↓	↓		↓	↓	3									3-2296926 thru 3-2296928
35	FB-01	3/30/98	1555		X	Area H - Bag Loading	1	1		9	8	0	4	0	Field Blank	3-2296929
	↓	↓	↓		↓	↓	1		1						Field Blank	3-2296930
36	RB-01	3/30/98	1610		X	Area H - Bag Loading	1	1		9	8	0	4	0	Rinsate Blank	3-2296931
	↓	↓	↓		↓	↓	1		1						Rinsate Blank	3-2296932
	TEMPERATURE BLANK						1								=6°C	3-2296936

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Mary L. Popotage	3-31-98 2000				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
			4/1/98 0920	FED EX AIRBILL: 805669742318 ~~805669742329~~ USDP 3391	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

ORIGINAL (Red Ink)

3 16347

Region III, Office of Analytical Services and Quality Assurances
Annapolis, Maryland

HAZARD AND RISK-EXPOSURE DATA SHEET
LEVELS OF PERSONAL PROTECTION DURING SAMPLING

BACKGROUND

Under the authority Section 104 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) of 1980, Section 311 of the Clean Water Act, and Subtitle I of the Resource Conservation and Recovery Act (RCRA), EPA has been delegated the responsibility to undertake response actions with respect to the release or potential release of oil, petroleum, or hazardous substances that pose a substantial threat to human health or welfare, or the environment.

GENERAL

This form is to be used when collecting Environmental Samples (i.e. streams, farm ponds, wells, soils etc.) and for Hazardous Sample (i.e. drums, storage tanks, lagoons, leachates, hazardous waste sites). This information is intended for use as a guide for the safe handling of these laboratory samples in accordance with EPA and OSHA regulations. The sample classification(s) and levels of personal protection used by the sampler in all situations will enable the analyst to be better aware of potential exposure to substances in air, splashes of liquids, or other direct contact with material due to work being done.

DEGREE OF PROTECTION

____ Level A: Highest level of respiratory, skin, and eye protection needed. Fully encapsulated suit, respirator self-contained (Tank type).

____ Level B: Highest level of respiratory protection but lesser level of skin protection needed. Chemical suit, respirator self-contained (Tank type).

____ Level C: Lesser level of respiratory protection than Level B. Skin protection criteria are similar to Level B. Chemical suit, canister respirator/cartridge

X Level D: Work uniform without any respirator or skin hazards. Lab coat, gloves etc.

CLASSIFIED FIELD SAMPLES

X Environmental ____ Hazardous ____ Comb. (Env. & Haz.) ____ Radioactive

Site Name: RADFORD ARMY AMMUNITION PLANT Sampling Date: 3-30-98

Sta No. SS-08a, SL-08, SL-10B, WW-04, SL-10, SL-11B, SL-11, ____, ____, ____

Field pH: NA, NA, NA, 7.95, NA, NA, NA, ____, ____, ____
(must be taken prior to submission of aqueous samples)

Sampler: CATHY DARE Work Phone Number: 610-771-0591

Personal observations at time of sampling (surroundings): NO STRESSED VEGETATION OR OBVIOUS SIGNS OF CONTAMINATION

Sample collection observations (physical sample, odors etc.): ONLY SAMPLE SL-11 HAD SPECIFIC PHYSICAL CHARACTERISTICS - OILY SHEEN.

FedEx USA Airbill — FedEx Tracking Number 805669742318 — Form I.D. No. 0210 — SPH41 — Recipient's Copy — ORIGINAL (Red)

From: 3-31-98

Sender's Name: IVY PORPOTAGE — Phone (610) 771-0591

Company: TECHLAW INC EH&S

Address: 215 PRESIDENTIAL BLVD — Dept./Floor/Suite/Room

City: BALA CYNWYD — State: PA — ZIP: 19004-1201

Your Internal Billing Reference Information: 09-C68Y

To: Recipient's Name: K ARNOLD TURNER — Phone: 410 573-2600

Company: U.S. OASQA (CRL) LAB

Address: 839 BESTGATE ROAD — Dept./Floor/Suite/Room — Check here if residence (Extra charge applies for FedEx Express Saver)

(HOLD* at FedEx location, print FedEx address here)

City: ANNAPOLIS — State: MD — ZIP: 21401

For HOLD at FedEx Location check here: Hold Weekday (Not available with FedEx First Overnight); Hold Saturday (Not available at all locations) (Available for FedEx Priority Overnight and FedEx 2Day only)

For WEEKEND Delivery check here (Extra Charge. Not available at all locations): Saturday Delivery (Available for FedEx Priority Overnight and FedEx 2Day only); NEW Sunday Delivery (Available for FedEx Priority Overnight only)

805669742318

4a Express Package Service *Packages under 150 lbs.* — Delivery commitment may be later in some areas.

- [x] FedEx Priority Overnight (Next business morning)
- [ ] FedEx Standard Overnight (Next business afternoon)
- [ ] FedEx First Overnight (Earliest next business morning delivery to select locations) (Higher rates apply)
- [ ] FedEx 2Day (Second business day)
- [ ] FedEx Express Saver (Third business day)

FedEx Letter Rate not available. Minimum charge: One pound rate.

4b Express Freight Service *Packages over 150 lbs.* — Delivery commitment may be later in some areas.

- [ ] FedEx Overnight Freight (Next business day)
- [ ] FedEx 2Day Freight (Second business day)
- [ ] FedEx Express Saver Freight (Up to 3 business days)

(Call for delivery schedule. See back for detailed descriptions of freight services.)

5 Packaging — [ ] FedEx Letter (Declared value limit $500) [ ] FedEx Pak [ ] FedEx Box [ ] FedEx Tube [x] Other Pkg.

6 Special Handling — Does this shipment contain dangerous goods?* (One box must be checked)

- [x] No
- [ ] Yes (As per attached Shipper's Declaration)
- [ ] Yes (Shipper's Declaration not required)
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg.
- [ ] Cargo Aircraft Only

*Dangerous Goods cannot be shipped in FedEx packaging.

7 Payment — Bill to:

- [x] Sender (Account No. in Section 1 will be billed)
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check
- [ ] Obtain Recipient FedEx Account No.

(Enter FedEx Account No. or Credit Card No. below)

MS | MS

Total Packages: 1 — Total Weight: 50 lb — Total Declared Value*: $ .00 — Total Charges: $ — Credit Card Auth.

*When declaring a value higher than $100 per shipment, you pay an additional charge. See SERVICE CONDITIONS, DECLARED VALUE, AND LIMIT OF LIABILITY section for further information.

8 Release Signature

= 60°C

Your signature authorizes Federal Express to deliver this shipment without obtaining a signature and agrees to indemnify and hold harmless Federal Express from any resulting claims.

Questions? Call 1·800·Go·FedEx® (800)463-3339

321

WCSL 0298 Rev. Date 12/97 Part #153023 ©1994-97 FedEx PRINTED IN U.S.A.

004872810 0

FedEx USA Airbill — FedEx Tracking Number 805669742307 — Form I.D. No. 0210 — SPH41 — Recipient's Copy

From: 3-31-98

Sender's Name: IVY PORPOTAGE — Phone (610) 771-0591

Company: TECHLAW INC EH&S

Address: 215 PRESIDENTIAL BLVD — Dept./Floor/Suite/Room

City: BALA CYNWYD — State: PA — ZIP: 19004-1201

Your Internal Billing Reference Information: 09-C68Y

To: Recipient's Name: ARNOLD TURNER — Phone: 410 573-2600

Company: U.S. OASQA (CRL) LAB

Address: 839 BESTGATE ROAD — Dept./Floor/Suite/Room — Check here if residence (Extra charge applies for FedEx Express Saver)

(HOLD* at FedEx location, print FedEx address here)

City: ANNAPOLIS — State: MD — ZIP: 21401

For HOLD at FedEx Location check here: Hold Weekday (Not available with FedEx First Overnight); Hold Saturday (Not available at all locations) (Available for FedEx Priority Overnight and FedEx 2Day only)

For WEEKEND Delivery check here (Extra Charge. Not available at all locations): Saturday Delivery (Available for FedEx Priority Overnight and FedEx 2Day only); NEW Sunday Delivery (Available for FedEx Priority Overnight only)

4a Express Package Service *Packages under 150 lbs.* — Delivery commitment may be later in some areas.

- [x] FedEx Priority Overnight (Next business morning)
- [ ] FedEx Standard Overnight (Next business afternoon)
- [ ] FedEx First Overnight (Earliest next business morning delivery to select locations) (Higher rates apply)
- [ ] FedEx 2Day (Second business day)
- [ ] FedEx Express Saver (Third business day)

FedEx Letter Rate not available. Minimum charge: One pound rate.

4b Express Freight Service *Packages over 150 lbs.* — Delivery commitment may be later in some areas.

- [ ] FedEx Overnight Freight (Next business day)
- [ ] FedEx 2Day Freight (Second business day)
- [ ] FedEx Express Saver Freight (Up to 3 business days)

(Call for delivery schedule. See back for detailed descriptions of freight services.)

5 Packaging — [ ] FedEx Letter (Declared value limit $500) [ ] FedEx Pak [ ] FedEx Box [ ] FedEx Tube [x] Other Pkg.

6 Special Handling — Does this shipment contain dangerous goods?* (One box must be checked)

- [x] No
- [ ] Yes (As per attached Shipper's Declaration)
- [ ] Yes (Shipper's Declaration not required)
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg.
- [ ] Cargo Aircraft Only

*Dangerous Goods cannot be shipped in FedEx packaging.

7 Payment — Bill to:

- [x] Sender (Account No. in Section 1 will be billed)
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check
- [ ] Obtain Recipient FedEx Account No.

(Enter FedEx Account No. or Credit Card No. below)

Total Packages: 1 — Total Weight: 50 lb — Total Declared Value*: $ .00 — Total Charges: $ — Credit Card Auth.

*When declaring a value higher than $100 per shipment, you pay an additional charge. See SERVICE CONDITIONS, DECLARED VALUE, AND LIMIT OF LIABILITY section for further information.

8 Release Signature

Your signature authorizes Federal Express to deliver this shipment without obtaining a signature and agrees to indemnify and hold harmless Federal Express from any resulting claims.

Questions? Call 1·800·Go·FedEx® (800)463-3339

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ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 3
841 Chestnut St.
Philadelphia, Pennsylvania 19107

CHAIN OF CUSTODY RECORD

EP 98084
RGQ 98118

PROJ. NO.: 13-2816Y
PROJECT NAME: Radford Army Ammunition Plant
SAMPLERS: (Signature) Catherine Dare, Mark D. LaCoste, Catherine Palmer Dare, Mark D. LaCoste

U.S. OASQA (CEL) Lab
839 Bestgate Road
Annapolis, MD 21401
Attn: Arnold Turner

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TAL Metals	TAL Mercury	Cyanide	REMARKS	Tag#
SS-08	3/30/98	1250		X	Area D-Rail Yard	1	X	X	980402 01		3-2244650
2 SL-08	3/30/98	1345		X	Area D-Rail Yard	1	X	X	980402 02		3-2244651
3 SL-10	3/30/98	1355		X	Area D-Rail Yard	1	X	X	980402 03	Duplicate of SL-08	3-2244652
1 SL-11	3/30/98	1840		X	Area H-Bag Loading	1	X	X	980402 04	Duplicate of SL-10	3-2244662
5 SL-10	3/30/98	1830		X	Area H-Bag Loading	1	X	X	980402 05		3-2244663
6 SS-11a	3/30/98	1018		X	Area B-Ignitor Area	1	X	X	980402 06		3-2244762
7 SS-11b	3/30/98	1033		X	Area B-Ignitor Area	1	X	X	980402 07		3-2244763
3 SS-14	3/31/98	1005		X	Area E-Bag Loading	1	X	X	980402 08		3-2244656
1 SD-08	3/31/98	1145		X	Area G-NRSD Stream	1	X	X	980402 09		3-2244664
0 SD-06	3/31/98	1440		X	Area G-NRSD Stream	1	X	X	980402 10		3-2244688
1 SD-07	3/31/98	1225		X	Area G-NRSD Stream	2	X	X	980402 11	Do QC	3-2244660, 3-2244661
2 SL-11	3/31/98	1750		X	Area H-Bag Loading	1	X	X	980402 12		3-2244684
3 SS-12	3/30/98	1105		X	Area B-Ignitor Area	1	X	X	980402 13		3-2296937
TEMPERATURE BLANK						1					3-2296938
										TB = 4°C	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Catherine Palmer Dare	04/01/98 2000				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
		D. Smith	4/2/98 0920	FEDEX Airbill No: 805669742270	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

ORIGINAL (Red)

3 03694

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

FY98089
RSQ98118

Sheip-QC

REGION 3
841 Chestnut St.
Philadelphia, Pennsylvania 19107

CHAIN OF CUSTODY RECORD

PROJ. NO.: 13-286Y
PROJECT NAME: Radford Army Ammunition Plant

SAMPLERS: (Signature) Robert W. Scrafford, SIDNEY T. CURRAN

U.S. DASQA (CRL) Lab
839 Bestgate Road
Annapolis, MD 21401

REMARKS: Attn: Arnold Turner

	STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TAL metals + Cyanide	8021 Tar						TAG #
10	WS-03	3/30/98	1015		X	NR-WS-03	1	1		9	8	0	4	0	3-2234396
11	WS-04	3/31/98	1110		X	NR-WS-04	1	1		9	8	0	4	0	3-2244704
12	WS-05	3/31/98	1205		X	NR-WS-05	1	1		9	8	0	4	0	3-2244700

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Robert W. Scrafford	4/1/98 0920				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
		D. Smith	4-2-98 0920	Fed Ex Airbill No:	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

ORIGINAL (Red)

2 10056

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

FY-18087
RZQ9848

CHAIN OF CUSTODY RECORD

REGION 3
841 Chestnut St.
Philadelphia, Pennsylvania 19107

Shelf 6C

PROJ. NO.: 13-2861
PROJECT NAME: Radford Army Ammunition Plant
SAMPLERS: (Signature) Catherine Dare, Mark D. LaGatta

U.S. OASQA(CRL)Lab
839 Bestgate Road
Annapolis, MD 21401
ATTN: Arnold Turner

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TAL Metals-250ml poly	TAL Mercury-250ml poly	Cyanide & 250ml poly	REMARKS	Tag #
1 SW-07	3/31/98	1205		X	Area G - NRSD Stream	1	1		98040214		3-2244658
						1		1			3-2244657
						1		1			3-2244659
5 WW-06	3/31/98	1155		X	Area H - Bag Loading	1	1		98040215	Duplicate of WW-06	3-2244666
						1		1		Duplicate of WW-06	3-2244665
						1		1		Duplicate of WW-06	3-2244667
6 WW-06	3/30/98	1145		X	Area H - Bag Loading	3	3		98040216	Do QC	3-2244675 thru 3-2244677
						3		3		Do QC	3-2244672 thru 3-2244674
						3		3		Do QC	3-2244669 thru 3-2244671
7 WW-04	3/30/98	1205		X	Area D - Rail Yard	1	1		98040217		3-2244654
						1		1			3-2244653
						1		1			3-2244655
8 FB-01	3/30/98	1555		X	Area H - Bag Loading	1	1		98040218	Field Blank	3-2244679
						1		1		Field Blank	3-2244678
						1		1		Field Blank	3-2244680

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Catherine Palmer Dare	04/01/98 2010				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature) N. Smith	Date / Time 4-2-98 0920	Remarks FEDEX Airbill No.: 805669742270	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

ORIGINAL (Red)

3 03691

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

FY 10001
REQ 98118

CHAIN OF CUSTODY RECORD

REGION 3
841 Chestnut St.
Philadelphia, Pennsylvania 19107

SHEIF-6C

PROJ. NO.: 13-2864
PROJECT NAME: Radford Army Ammunition Plant

SAMPLERS: (Signature) Catherine Dare, Catherine Palmadore, Mark D. LaGatta, Mark D. LaGatta

U.S. OASQA (CKL) Lab
839 Bestgate Road
Annapolis, MD 21401
Attn: Arnold Turner

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TAL Mercury-250ml poly	TAL Metals 3-250ml poly	Cyanide-250ml poly	REMARKS	Tag #
RB-01	3/30/98	1610		X	Area H - Bag Loading	1	1			Rinsate Blank	3-2244681
						1		1		Rinsate Blank	3-2244682
						1			1	Rinsate Blank	3-2244683

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Catherine Palmadore	04/01/98 2010				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature) D. Smith	Date / Time 4-2-98 0920	Remarks 80566974227 0 FEDEX Airbill No:	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

ORIGINAL (Red)

3 03692

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

FY98054
RQ98148

Sheet-6C

REGION 3
841 Chestnut St.
Philadelphia, Pennsylvania 19107

CHAIN OF CUSTODY RECORD

PROJ. NO.: 13-286Y
PROJECT NAME: Radford Army Ammunition Plant
SAMPLERS: (Signature) Catherine Dare, Mark D. LaGatta

U.S. OASQA (CRL) Lab
839 Bestgate Road
Annapolis, MD 21401

REMARKS: Attn: Arnold Turner

	STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TCL BNA 4oz Amber	TCL Pest/PCB 4oz Amber	TCL BNA 1L Amber	TCL Pest/PCB 1L Amber								Tag #
4	SW07	3/31/98	1205		X	Area G NRSD Stream	1			9	8	0	4	0	2	1	4		3-2244752
	↓	↓	↓		↓	↓	1					1							3-2244753
3	SS-14	3/31/98	1005		X	Area E Bag Loading	1	1		9	8	0	4	0	2	0	8		3-2244750
	↓	↓	↓		↓	↓	1		1										3-2244751
1	SD07	3/31/98	1225		X	Area G NRSD Stream	2	2		9	8	0	4	0	2	1	1	ms/msd	3-2244756, 3-2244757
	↓	↓	↓		↓	↓	2		2									ms/msd	3-2244758, 3-2244759
2	SD-06	3/31/98	1440 ~~1145~~	CPO 4/1/98	X	Area G NRSD Stream	1	1		9	8	0	4	0	2	1	0		3-2244754
	↓	↓	↓		↓	↓	1		1										3-2244755
1	SD-08	3/31/98	1145		X	Area G NRSD Stream	1	1		9	8	0	4	0	2	0	9		3-2244760
	↓	↓	↓		↓	↓	1		1										3-2244761
	TEMPERATURE BLANK						1												3-2296933

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Catherine Dare	04/01/98 2010				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature) D. Smith	Date / Time 4-2-98 0920	Remarks	

FEDEX Airbill No: 805669742292

ORIGINAL (Red)

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

3 03693

ORIGINAL (Red)

Region III, Office of Analytical Services and Quality Assurances
Annapolis, Maryland
HAZARD AND RISK-EXPOSURE DATA SHEET
LEVELS OF PERSONAL PROTECTION DURING SAMPLING

BACKGROUND

Under the authority Section 104 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) of 1980, Section 311 of the Clean Water Act, and Subtitle I of the Resource Conservation and Recovery Act (RCRA), EPA has been delegated the responsibility to undertake response actions with respect to the release or potential release of oil, petroleum, or hazardous substances that pose a substantial threat to human health or welfare, or the environment.

GENERAL

This form is to be used when collecting Environmental Samples (i.e. streams, farm ponds, wells, soils etc.) and for Hazardous Sample (i.e. drums, storage tanks, lagoons, leachates, hazardous waste sites). This information is intended for use as a guide for the safe handling of these laboratory samples in accordance with EPA and OSHA regulations. The sample classification(s) and levels of personal protection used by the sampler in all situations will enable the analyst to be better aware of potential exposure to substances in air, splashes of liquids, or other direct contact with material due to work being done.

DEGREE OF PROTECTION

____ Level A: Highest level of respiratory, skin, and eye protection needed. Fully encapsulated suit, respirator self-contained (Tank type).

____ Level B: Highest level of respiratory protection but lesser level of skin protection needed. Chemical suit, respirator self-contained (Tank type).

____ Level C: Lesser level of respiratory protection than Level B. Skin protection criteria are similar to Level B. Chemical suit, canister respirator/cartridge

X Level D: Work uniform without any respirator or skin hazards. Lab coat, gloves etc.

CLASSIFIED FIELD SAMPLES

X Environmental ____ Hazardous ____ Comb. (Env. & Haz.) ____ Radioactive

Site Name: RADFORD ARMY AMMUNITION PLANT Sampling Date: 3-30-98, 3-31-98

Sta No. SW-07, WW-04, WW-106, WW-06, TB-01, RB-01, FB-01, REMAINING SOLIDS

Field pH: 7.64, 7.95, 7.10, 7.10, REAGENT GRADE H2O, REAGENT GRADE H2O, REAGENT GRADE H2O, —, NA —
(must be taken prior to submission of aqueous samples)

Sampler: CATHY DARE Work Phone Number: 610-771-0591

Personal observations at time of sampling (surroundings): Typical soil and water samples, no obvious signs of contamination, no stressed vegetation.

Sample collection observations (physical sample, odors etc.): No specific physical characteristics of concern. Soil sample SL-11 did have oily sheen, however no odor.

FedEx USA Airbill FedEx Tracking Number 805669742270 Form I.D. No. 0210 SPH41 Recipient's Copy ORIGINAL

From
Date 4-1-98
(b) (4) [redacted]
Sender's Name Phone (610) 771-0591
Company TECHLAW INC EH&S
Address 215 PRESIDENTIAL BLVD Dept./Floor/Suite/Room
City BALA CYNWYD State PA ZIP 19004-1201
Your Internal Billing Reference Information C9-068Y

To
(b) (4) [redacted]
Recipient's Name Phone (410) 573-2600
Company OASQA LAB
Address 839 BESTGATE ROAD Dept./Floor/Suite/Room
("HOLD" at FedEx location, print FedEx address here) Check here if residence (Extra charge applies for FedEx Express Saver)
City ANNAPOLIS State MD ZIP 21401

For HOLD at FedEx Location check here
Hold Weekday (Not available with FedEx First Overnight)
Hold Saturday (Not available at all locations) (Available for FedEx Priority Overnight and FedEx 2Day only)

For WEEKEND Delivery check here (Extra Charge. Not available at all locations)
Saturday Delivery (Available for FedEx Priority Overnight and FedEx 2Day only)
NEW Sunday Delivery (Available for FedEx Priority Overnight only)

805669742270

4a Express Package Service Packages under 150 lbs. Delivery commitment may be later in some areas.
[x] FedEx Priority Overnight (Next business morning)
[ ] FedEx Standard Overnight (Next business afternoon)
[ ] FedEx First Overnight (Earliest next business morning delivery to select locations) (Higher rates apply)
[ ] FedEx 2Day (Second business day)
[ ] FedEx Express Saver (Third business day)
FedEx Letter Rate not available. Minimum charge: One pound rate.

4b Express Freight Service Packages over 150 lbs. Delivery commitment may be later in some areas
[ ] FedEx Overnight Freight (Next business day)
[ ] FedEx 2Day Freight (Second business day)
[ ] FedEx Express Saver Freight (Up to 3 business days)
(Call for delivery schedule. See back for detailed descriptions of freight services.)

5 Packaging [ ] FedEx Letter [ ] FedEx Pak (Declared value limit $500) [ ] FedEx Box [ ] FedEx Tube [x] Other Pkg.

6 Special Handling (One box must be checked)
Does this shipment contain dangerous goods?* [x] No [ ] Yes (As per attached Shipper's Declaration) [ ] Yes (Shipper's Declaration not required)
[ ] Dry Ice Dry Ice, 9, UN 1845 _____ x _____ kg.
[ ] Cargo Aircraft Only
*Dangerous Goods cannot be shipped in FedEx packaging

7 Payment
Bill to: [x] Sender (Account No. in Section 1 will be billed) [ ] Recipient [ ] Third Party [ ] Credit Card [ ] Cash/Check
[ ] Obtain Recipient FedEx Account No.
(Enter FedEx Account No. or Credit Card No. below)

Total Packages 1 Total Weight 70lb Total Declared Value* $ .00 Total Charges $
*When declaring a value higher than $100 per shipment, you pay an additional charge. See SERVICE CONDITIONS, DECLARED VALUE, AND LIMIT OF LIABILITY section for further information.
Credit Card Auth.

8 Release Signature
Your signature authorizes Federal Express to deliver this shipment without obtaining a signature and agrees to indemnify and hold harmless Federal Express from any resulting claims.
Questions? Call 1·800·Go·FedEx® (800)463-3339
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004872810 0

FedEx USA Airbill FedEx Tracking Number 805669742292 Form I.D. No. 0210 SPH41 Recipient's Copy

From
Date 4-1-98
(b) (4) [redacted]
Sender's Name Phone (610) 771-0591
Company TECHLAW INC EH&S
Address 215 PRESIDENTIAL BLVD Dept./Floor/Suite/Room
City BALA CYNWYD State PA ZIP 19004-1201
Your Internal Billing Reference Information C9-068Y

To
(b) (4) [redacted]
Recipient's Name Phone (410) 573-2600
Company OASQA LAB
Address 839 BESTGATE ROAD Dept./Floor/Suite/Room
("HOLD" at FedEx location, print FedEx address here) Check here if residence (Extra charge applies for FedEx Express Saver)
City ANNAPOLIS State MD ZIP 21401

For HOLD at FedEx Location check here
Hold Weekday (Not available with FedEx First Overnight)
Hold Saturday (Not available at all locations) (Available for FedEx Priority Overnight and FedEx 2Day only)

For WEEKEND Delivery check here (Extra Charge. Not available at all locations)
Saturday Delivery (Available for FedEx Priority Overnight and FedEx 2Day only)
NEW Sunday Delivery (Available for FedEx Priority Overnight only)

4a Express Package Service Packages under 150 lbs. Delivery commitment may be later in some areas.
[x] FedEx Priority Overnight (Next business morning)
[ ] FedEx Standard Overnight (Next business afternoon)
[ ] FedEx First Overnight (Earliest next business morning delivery to select locations) (Higher rates apply)
[ ] FedEx 2Day (Second business day)
[ ] FedEx Express Saver (Third business day)
FedEx Letter Rate not available. Minimum charge: One pound rate.

4b Express Freight Service Packages over 150 lbs. Delivery commitment may be later in some areas.
[ ] FedEx Overnight Freight (Next business day)
[ ] FedEx 2Day Freight (Second business day)
[ ] FedEx Express Saver Freight (Up to 3 business days)
(Call for delivery schedule. See back for detailed descriptions of freight services.)

5 Packaging [ ] FedEx Letter [ ] FedEx Pak (Declared value limit $500) [ ] FedEx Box [ ] FedEx Tube [x] Other Pkg.

6 Special Handling (One box must be checked)
Does this shipment contain dangerous goods?* [x] No [ ] Yes (As per attached Shipper's Declaration) [ ] Yes (Shipper's Declaration not required)
[ ] Dry Ice Dry Ice, 9, UN 1845 _____ x _____ kg.
[ ] Cargo Aircraft Only
*Dangerous Goods cannot be shipped in FedEx packaging

7 Payment
Bill to: [x] Sender (Account No. in Section 1 will be billed) [ ] Recipient [ ] Third Party [ ] Credit Card [ ] Cash/Check
[ ] Obtain Recipient FedEx Account No.
(Enter FedEx Account No. or Credit Card No. below)

Total Packages 1 Total Weight 30lb Total Declared Value* $ .00 Total Charges $
*When declaring a value higher than $100 per shipment, you pay an additional charge. See SERVICE CONDITIONS, DECLARED VALUE, AND LIMIT OF LIABILITY section for further information.
Credit Card Auth.

8 Release Signature
Your signature authorizes Federal Express to deliver this shipment without obtaining a signature and agrees to indemnify and hold harmless Federal Express from any resulting claims
Questions?
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WCSL 0298 Rev. Date 12/97

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

FY 98 089
REQ 98118

Shelf - 7C

REGION 3
841 Chestnut St.
Philadelphia, Pennsylvania 19107

page 1 of 1

CHAIN OF CUSTODY RECORD

PROJ. NO.: 13-286Y
PROJECT NAME: RAO FORD ARMY AMMUNITION Plant

SAMPLERS: (Signature) SIDNEY J. CURRAN, Robert W. Scrafford

V.S. OAS QA (CRL) Lab
839 Bestgate Road
Annapolis, MD 21401
Attn: Arnold Turner

	STA. NO.	DATE (Lab)	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TCL BNA/PCB/PEST 4-oz Amber Jar	TCL BNA/PCB/PEST 4-oz Jar						REMARKS	TAG #
1	TR-05D	4/8/98	1445		X	NR-TR-05D	2	2		9	8	0	4	0	3	3 1		3-2196446 AND 3-2196445
2	TR-05B	4/1/98	1437		X	NR-TR-05B	2	2		9	8	0	4	0	3	0 2		3-2196443 AND 3-2196444
3	TR-05A	4/1/98	1430		X	NR-TR-05A	2	2		9	8	0	4	0	3	0 3		3-2196441 And 3-2196442
4	TR-09B	4/2/98	1405		X	NR-TR-09B	2	2		9	8	0	4	0	3	0 4		3-2196439 And 3-2196440
5	TR-04E F	4/2/98	1345		X	NR-TR-04E F RWS 4/2/98	2	2		9	8	0	4	0	3	0 5	3-2196447 And 3-2196448	~~3-2196435 And 3-2196436~~
6	TR-04FD	4/2/98	1345		X	NR-TR-04E FD RWS 4/2/98	2	2		9	8	0	4	0	3	0 6	3-2196449 And 3-2196450 RWS 4/2/98	~~3-2196437 And 3-2196438~~
7	TR-04A	4/2/98	1340		X	NR-TR-04A	2	2		9	8	0	4	0	3	0 7		3-2196433 And 3-2196434
8	TR-07C	4/2/98	1435		X	NR-TR-07C	2	2		9	8	0	4	0	3	0 8		3-2196431 And 3-2196432
9	TR-07A	4/2/98	1440		X	NR-TR-07A	2	2		9	8	0	4	0	3	0 9		3-2196429 And 3-2196430
10	TR-03E	4/2/98	1040		X	NR-TR-03E	2	2		9	8	0	4	0	3	1 0		3-2196427 And 3-2196428
11	TR-02C	4/2/98	1010		X	NR-TR-02C	2	2		9	8	0	4	0	3	1 1		3-2196425 And 3-2196426
12	TR-02A	4/2/98	1005		X	NR-TR-02A	2	2		9	8	0	4	0	3	1 2		3-2196423 And 3-2196424
13	TR-01B	4/2/98	0955		X	NR-TR-01B	2	2		9	8	0	4	0	3	1 3		3-2196421 And 3-2196422
14	TR-01A	4/2/98	0950		X	NR-TR-01A	2	2		9	8	0	4	0	3	1 4		3-2196419 And 3-2196420
15	TR-04E	4/2/98	1420		X	NR-TR-04E	2		2	9	8	0	4	0	3	1 5		3-2196499 And 3-2196500

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Robert W. Scrafford	4/2/98 1436				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
		[illegible] Smith	4/3/98 0915	NR-TR-04E FD RWS 4/2/98 Duplicate of NR-TR-04E F RWS Case is complete	

Fed Ex Airbill #: 2894308093

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

3 16323

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

FY 98089
REQ98118

Sheif-7C

REGION 3
841 Chestnut St.
Philadelphia, Pennsylvania 19107

CHAIN OF CUSTODY RECORD

PROJ. NO.: 13-286Y
PROJECT NAME: Radford Army Ammunition Plant
SAMPLERS: (Signature) Catherine Dare, M.A. La Gatta, Catherine Palmer Dare

U.S. OASDA(CRL) Lab
839 Bestgate Road
Annapolis, MD 21401
Attn: Arnold Turner

	STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TCL VOA 40ml vial	TCL VOA 120ml vial		REMARKS	Tag #
16	SD-03	4/1/98	1405		X	Area G-NESD Stream	2		2	980403 19		3-2296939 3-2296940
17	SD-04	4/1/98	1335		X	Area G-NESD Stream	2		2	980403 17		3-2296946 3-2296947
18	SD-05	4/1/98	1510		X	Area G-NESD Stream	2		2	980403 18		3-2296953 3-2296954
19	TB-02	3/30/98	2400		X	Four Points	3	3		980403 10		3-2244697 thru 3-2244699
20	SS-21	4/1/98	1630		X	Area I-Bag Loading 440	2		2	980403 20		3-2296960 3-2296961
21	SS-20	4/1/98	1705		X	Area I-Bag Loading 440	4		4	980403 21	MS/MSD	3-2296962 thru 3-2296965
22	RB-02	4/1/98	1755		X	Area I-Bag Loading 440	3	3		980403 22	Rinsate Blank	3-2296969 thru 3-2296971
23	FB-02	4/1/98	1745		X	Area I-Bag Loading 440	3	3		980403 23	Field Blank	3-2296966 thru 3-2296968
	TEMPERATURE BLANK						1					3-2297550

(b) (4) [redacted]

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	4-2-98 1430				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature) N. Smith	Date / Time 4/3/98 0915	Remarks FEDEX Airbill No: 805669742259	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

ORIGINAL (Red)

3 03689

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

FY 98089
R2Q 98118

SMUF-TC

REGION 3
841 Chestnut St.
Philadelphia, Pennsylvania 19107

CHAIN OF CUSTODY RECORD

PROJ. NO.: 13-286Y
PROJECT NAME: Radford Army Ammunition Plant
(b) (4) [redacted]

U.S. OASQA(CEL) Lab
839 Bestgate Road
Annapolis, MD 21401
Attn: Arnold Turner

	STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TCL VOAS-40ml vials	TCL VOAS-120ml vials		REMARKS	Tag #
4	SW-07	3/31/98	1205		X	Area G - NRSD Stream	3	3		98040324		3-224612 thru 3-224613
5	SD-06	3/31/98	1440		X	Area G - NRSD Stream	2		2	98040325		3-224648 3-224649
6	SD-08	3/31/98	1145		X	Area G - NRSD Stream	2		2	98040326		3-224619 3-224620
7	SS-14	3/31/98	1005		X	Area E - Bag Loading	2		2	98040327		3-224610 3-224611
8	SD-07	3/31/98	1225		X	Area G - NRSD Stream	4		4	98040328	MS/MSD	3-224615 thru 3-224618
9	SS-08	3/30/98	1350	CPO 4/1/98	X	Area D - Railyard	2		2	98040329		3-224601 3-224602
0	SL-09	3/30/98	1345		X	Area D - Railyard	2		2	98040330		3-224603 3-224604
1	SL-10	3/30/98	1355		X	Area D - Railyard	2		2	98040331	Duplicate of SL-08	3-224605 3-224606
2	SL-110	3/30/98	1840		X	Area H - Bag Loading	2		2	98040332	Duplicate of SL-10	3-224623 3-224624
3	SL-10	3/30/98	1830		X	Area H - Bag Loading	2		2	98040333		3-224621 3-224622
4	WW-04	3/30/98	1205		X	Area D - Railyard	3	3		98040334		3-224607 thru 3-224609
5	WW-06	3/30/98	1655		X	Area H - Bag Loading	3	3		98040335	Duplicate of WW-06	3-224625 thru 3-224627
6	WW-06	3/30/98	1645		X	Area H - Bag Loading	9	9		98040336	MS/MSD	3-224630 thru 3-224638
7	SL-11	3/30/98	1750		X	Area H - Bag Loading	2		2	98040337		3-224628 3-224629
8	TB-01	3/29/98	2400		X	Four Points		3		98040338	Trip Blank	3-224645 thru 3-224647

(b) (4) [redacted]	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	4-2-98 1430				
	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
		N. Smith	4/3/98 0915	FEDEX Airbill No.: 805669742260

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

ORIGINAL (Red)

2-02687

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

FY 98089
RCA 98117

REGION 3 Shelf-7C
841 Chestnut St.
Philadelphia, Pennsylvania 19107

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
13-2806Y	Radford Army Ammunition Plant

SAMPLERS: (Signature) Catherine Dare, M.P. LaGatta

U.S. OASQA (CRL) Lab
839 Bestgate Road
Annapolis, MD 21401

REMARKS: Attn: Arnold Turner

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TCL VOAS-40ml vials	TCL VOAS-120ml vials					REMARKS
RB-01	3/30/98	1610		X	Area H-Bag Loading	3	3		9 8 0 4 0 3 3				Rinsate Blank 3-2244642 thru 3-2244644
~~TB-02~~	~~3/30/98~~	~~2400~~		~~X~~	~~Four Points~~	~~3~~	~~3~~		~~QPD 4/1/98~~				~~Trip Blank 3-2244697 thru 3-2244699~~
FB-01	3/30/98	1555		X	Area H-Bag Loading	3	3		9 8 0 4 0 3 4				Field Blank 3-2244639 thru 3-2244641
TEMPERATURE BLANK						1							3-2296935

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
(b) (4) [redacted]	4-2-98 1430				
	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
		D. Smith	4/3/98 0915	FEDEX Airbill No.: 805669742260

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

OPA-1 (Rev.)

3 03688

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

FY 98089
RQ98149

Sheet - K

REGION 3
841 Chestnut St.
Philadelphia, Pennsylvania 19107

CHAIN OF CUSTODY RECORD

U.S. OASQA (CRL) Lab
839 Bestgate Road
Annapolis, MD 21401
Attn: Arnold Turner

PROJ. NO.: 13-2861
PROJECT NAME: Radford Army Ammunition Plant
SAMPLERS: (Signature) Catherine Dare, Catherine Palmer Dare

	STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TAL Metals 8270	TAL Mercury 8270	Cyanide 8270	TAL Metals 250ml poly	TAL Mercury 250ml poly	Cyanide 250 ml poly	REMARKS	Tag#
16	SD-03	4/1/98	1405		X	Area G-NRSD Stream	1	X	X	980403160					3-2296945
17	SD-04	4/1/98	1335		X	Area G-NRSD Stream	1	X	X	980403170					3-2296952
18	SD-05	4/1/98	1510		X	Area G-NRSD Stream	1	X	X	980403180					3-2296959
20	SS-21	4/1/98	1630		X	Area I-Bag Loading 440	1	X	X	980403200					3-2296986
21	SS-20	4/1/98	1705		X	Area I-Bag Loading 440	2	X	X	980403210				Do QC	3-2296991 3-2296992
23	FB-02	4/1/98	1745		X	Area I-Bag Loading 440	1			980403220				Field Blank	3-2296977
	↓	↓	↓		↓	↓	1				1			Field Blank	3-2296976
	↓	↓	↓		↓	↓	1					1		Field Blank	3-2296978
22	RB-02	4/1/98	1755		X	Area I-Bag Loading 440	1			980403230				Rinsate Blank	3-2296982
	↓	↓	↓		↓	↓	1				1			Rinsate Blank	3-2296981
	↓	↓	↓		↓	↓	1					1		Rinsate Blank	3-2296983

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
(b) (4) [redacted]	4-2-98 1430				
	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
		N. Smith	4/3/98 0915	FEDEX Airbill No.: 805669742086	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

ORIGINAL (Red)

3 03684

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REQ 98118

CHAIN OF CUSTODY RECORD

REGION 3
841 Chestnut St.
Philadelphia, Pennsylvania 19107

PROJ. NO.: 13-286Y
PROJECT NAME: Radford Army Ammunition Plant

SAMPLERS: (Signature) Catherine Dare, Catherine Palmer Dare, M.O. La Gatta

U.S. OASQA (CRL) Lab
839 Bestgate Road
Annapolis, MD 21401
Attn: Arnold Turner

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TCL BNA 4oz Amber	TCL Pest/PCB 4oz Amber	TCL BNA 1L Amber	TCL Pest/PCB 1L Amber		REMARKS	Tag #
6 SD-03	4/1/98	1405		X	Area G-NRSD Stream	1	1		98040316				3-2296941
↓	↓	↓		↓	↓	1		1					3-2296942
7 SD-04	4/1/98	1335		X	Area G-NRSD Stream	1	1		98040317				3-2296948
↓	↓	↓		↓	↓	1		1					3-2296949
8 SD-05	4/1/98	1510		X	Area G-NRSD Stream	1	1		98040318				3-2296955 CPL 4/14
↓	↓	↓		↓	↓	1		1					3-2296956 CPL 4/14
10 SS-21	4/1/98	1630		X	Area I-Bag Loading 440	1	1		98040320				3-2296984
↓	↓	↓		↓	↓	1		1					3-2296985
11 SS-20	4/1/98	1705		X	Area I-Bag Loading 440	2	2		98040321			ms/msD	3-2296987 3-2296988
↓	↓	↓		↓	↓	2		2				ms/msD	3-2296989 3-2296990
3 FB-02	4/1/98	1745		X	Area I-Bag Loading 440	1			98040323			Field Blank	3-2296974
↓	↓	↓		↓	↓	1				1		Field Blank	3-2296975
12 RB-02	4/1/98	1755		X	Area I-Bag Loading 440	1			98040322			Rinsate Blank	3-2296979
↓	↓	↓		↓	↓	1				1		Rinsate Blank	3-2296980
TEMPERATURE BLANK						1							3-2296905

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
(b) (4) [redacted]	4-2-98 1430				
	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
		E. Smith	4/3/98 0915	FEDEX Airbill No.: 805669742086

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

ORIGINAL (Red)

3 03685

ORIGINAL (Red)

Region III, Central Regional Laboratory
Annapolis, Maryland
HAZARD AND RISK EXPOSURE DATA SHEET
LEVELS OF PERSONAL PROTECTION DURING SAMPLING

BACKGROUND

Under the authority of Section 104 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) of 1980, Section 311 of the Clean Water Act, and Subtitle I of the Resource Conservation and Recovery Act (RCRA), EPA has been delegated the responsibility to undertake response actions with respect to the release or potential release of oil, petroleum, or hazardous substances that pose a substantial threat to human health or welfare, or the environment.

GENERAL

This form is to be used when collecting Environmental Samples (i.e. streams, farm ponds, wells, soils etc.) and for Hazardous Samples (i.e. drums, storage tanks, lagoons, leachates, hazardous waste sites). This information is intended for use as a guide for the safe handling of these laboratory samples in accordance with EPA and OSHA regulations. The sample classification(s) and levels of personal protection used by the sampler in all situations will enable the analyst to be better aware of potential exposure to substances in air, splashes of liquids, or other direct contact with material due to work being done.

DEGREE OF PROTECTION

____ Level A: Highest level of respiratory, skin, and eye protection needed.
Fully encapsulated suit, respirator self-contained (Tank type)

____ Level B: Highest level of respiratory protection but lesser level of skin protection needed.
Chemical suit, respirator self-contained (Tank type)

____ Level C: Lesser level of respiratory protection than Level B. Skin protection criteria are similar to Level B.
Chemical suit, cannister respirator/cartridge

X Level D: Work uniform without any respirator or skin hazards.
Lab coat, gloves etc.

CLASSIFIED FIELD SAMPLES

____Environmental ____Hazardous X Comb. (Env. & Haz.) ____Radioactive

Site Name: RADFORD ARMY AMMUNITION PLANT Sampling Date: 4/1/98

Sta No. ____, ____, ____, ____, ____, ____, ____, ____, ____, ____
Field pH: ____, ____, ____, ____, ____, ____, ____, ____, ____, ____
(must be taken prior to submission of aqueous samples)

Sampler: STANLEY J. CURRAN Work Phone Number: 410-433-8832

Personal observations at time of sampling (surroundings): PLEASE REFER TO BACK OF THIS PAGE FOR PCB SCREENING CONCENTRATIONS FOR SOME OF THE SHIPPED SAMPLES. ALL "TRANSFORME

Sample collection observations (physical sample, odors etc.) SAMPLES ARE DESIGNATED BY A "TR-" PREFIX IN THE SAMPLE NUMBER.

4/2/98 JPC

ORIGINAL (Red)

A number of sampling locations under transformers or in the vicinity of old, fallen down utility poles were screened using DTech field screening kits. The following samples were from such locations:

Sample	PCB screening PPM
TR-01A	0.5-1.0
TR-01B	1.1-4.0
TR-02A	0.5-4.0
TR-02C	4.1-15
TR-03E	0.5-1.0
TR-07A	4.1-15
TR-07C	16-25
TR-04A	16-25
TR-04E	4.1-15
TR-04F	4.1-15
TR-04FD	4.1-15
TR-09B	4.1-15
TR-05A	4.1-25
TR-05B	1.1-4.0
TR-05D	4.1-15

General comments concerning sampling event:

Sampling was conducted at the New River Storage Depot section of the site. Activities at this area were largely filling bags with propellent for large artillery, and storage of these bags. The primary contaminants expected would be metals & explosives (PCBs are from utility pole transformer leaks). To date, only relatively low concentrations have been identified for metals and explosives. Explosives were identified in 6/97 samples at concentrations less than 5 ug/kg and are therefore not a significant concern in respect to health and safety. Most screening samples during this 3-4/98 sampling have been <0.5 ppm. The maximum concentration of approximately 20 samples was 2.5 ppm.

FedEx *USA Airbill*

Tracking Number 2894308093

212375 00365/01060

Recipient's Copy

1 From

Date 2/4/98

Sender's Name (b) (4) [redacted] Phone (410) 433-8832

Dept/Floor/Suite/Room

Company GANNETT FLEMING/GSA

Address CROSS KEYS EAST BLDG STE 200

City BALTIMORE State MD Zip 21210

2 Your Internal Billing Reference Information 31113/005/0507

3 To

Recipient's Name (b) (4) [redacted] Phone (410) 573-2600

Dept/Floor/Suite/Room

Company U.S. EPA OAS QA (LRL)

Address 839 Bestgate Road

(To "HOLD" at FedEx location, print FedEx address here)

City Annapolis State MD Zip 21401

For HOLD at FedEx Location check here

- [ ] Hold Weekday (Not available with FedEx First Overnight)
- [ ] Hold Saturday (Not available at all locations) (Not available with FedEx First Overnight or FedEx Standard Overnight)

For Saturday Delivery check here

- [ ] (Extra Charge. Not available to all locations) (Not available with FedEx First Overnight or FedEx Standard Overnight)

2 8 9 4 3 0 8 0 9 3

4a Express Package Service *Packages under 150 lbs.* Delivery commitment may be later in some areas.

- [x] FedEx Priority Overnight (Next business morning)
- [ ] FedEx Standard Overnight (Next business afternoon)
- [ ] FedEx 2Day* (Second business day)
- [ ] NEW FedEx First Overnight (Earliest next business morning delivery to select locations) (Higher rates apply)

* FedEx Letter Rate not available. Minimum charge: One pound FedEx 2Day rate.

4b Express Freight Service *Packages over 150 lbs.* Delivery commitment may be later in some areas.

- [ ] FedEx Overnight Freight (Next business-day service for any distance)
- [ ] FedEx 2Day Freight (Second business-day service for any distance)
- [ ] FedEx Express Saver Freight (Up to 3 business-day service based upon distance)

(Call for delivery schedule. See back for detailed descriptions of freight products.)

5 Packaging

- [ ] FedEx Letter
- [ ] FedEx Pak (Declared value limit $500)
- [ ] FedEx Box
- [ ] FedEx Tube
- [x] Other Pkg.

6 Special Handling

Does this shipment contain dangerous goods?

- [ ] Yes (As per attached Shipper's Declaration)
- [ ] Yes (Shipper's Declaration not required)
- [ ] Dry Ice — Dry Ice, 9, UN 1845 III ____ x ____ kg. 904 (Dangerous Goods Shipper's Declaration not required)
- [ ] CA Cargo Aircraft Only

7 Payment

- [ ] Obtain Recipient FedEx Account No.

Bill to:

- [x] Sender (Account no. in section 1 will be billed)
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

(Enter FedEx account no. or Credit Card no. below)

Total Packages	Total Weight	Total Declared Value*	Total Charges
1	52	$ .00	$

* When declaring a value higher than $100 per shipment, you pay an additional charge. See SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY section for further information.

Credit Card Auth.

8 Release Signature

Your signature authorizes Federal Express to deliver this shipment without obtaining a signature and agrees to indemnify and hold harmless Federal Express from any resulting claims.

272

Questions?
Call 1·800·Go·FedEx
(1-800-463-3339)

Rev. Date 5/96
PART #147956
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GDFE 10/96

ORIGINAL (Red)

Region III, Office of Analytical Services and Quality Assurances
Annapolis, Maryland
HAZARD AND RISK-EXPOSURE DATA SHEET
LEVELS OF PERSONAL PROTECTION DURING SAMPLING

BACKGROUND

Under the authority Section 104 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) of 1980, Section 311 of the Clean Water Act, and Subtitle I of the Resource Conservation and Recovery Act (RCRA), EPA has been delegated the responsibility to undertake response actions with respect to the release or potential release of oil, petroleum, or hazardous substances that pose a substantial threat to human health or welfare, or the environment.

GENERAL

This form is to be used when collecting Environmental Samples (i.e. streams, farm ponds, wells, soils etc.) and for Hazardous Sample (i.e. drums, storage tanks, lagoons, leachates, hazardous waste sites). This information is intended for use as a guide for the safe handling of these laboratory samples in accordance with EPA and OSHA regulations. The sample classification(s) and levels of personal protection used by the sampler in all situations will enable the analyst to be better aware of potential exposure to substances in air, splashes of liquids, or other direct contact with material due to work being done.

DEGREE OF PROTECTION

____ Level A: Highest level of respiratory, skin, and eye protection needed. Fully encapsulated suit, respirator self-contained (Tank type).

____ Level B: Highest level of respiratory protection but lesser level of skin protection needed. Chemical suit, respirator self-contained (Tank type).

____ Level C: Lesser level of respiratory protection than Level B. Skin protection criteria are similar to Level B. Chemical suit, canister respirator/cartridge

X Level D: Work uniform without any respirator or skin hazards. Lab coat, gloves etc.

CLASSIFIED FIELD SAMPLES

X Environmental ____ Hazardous ____ Comb. (Env. & Haz.) ____ Radioactive

Site Name: RADFORD ARMY AMMUNITION PLANT Sampling Date: 4-1-98

Sta No. TB-02, FB-02, RB-02, SD-03, SD-04, SD-05, SS-20, SS-21, ____, ____

Field pH: REAGENT GRADE H_2O, REAGENT GRADE H_2O, REAGENT GRADE H_2O, NA, NA, NA, NA, NA, ____, ____
(must be taken prior to submission of aqueous samples)

(b) (4) [redacted] Work Phone Number: (010-771-0591

Personal observations at time of sampling (surroundings): Typical soil samples. no obvious signs of contamination, no discoloration, no distressed vegetation.

Sample collection observations (physical sample, odors etc.): No specific physical characteristics of concern, no odors.

ORIGINAL (Red)

FedEx USA Airbill

FedEx Tracking Number 805669742259

Form No. 0210

SPH41

Recipient's Copy

1 From

Date 2 APR 98

Sender's Name (b) (4) [redacted] Phone (610) 771-0591

Company TECHLAW INC EH&S

Address 215 PRESIDENTIAL BLVD

Dept/Floor/Suite/Room

City BALA CYNWYD State PA ZIP 19004-1201

2 Your Internal Billing Reference Information 09-068Y

3 To

Recipient's Name (b) (4) [redacted] Phone 410 573 2600

Company OASQA LABORATORY

Address 839 Bestgate Rd

(To "HOLD" at FedEx location, print FedEx address here)

Dept/Floor/Suite/Room

☐ Check here if residence (Extra charge applies for FedEx Express Saver)

City Annapolis State MD ZIP 21401

For HOLD at FedEx Location check here

☐ Hold Weekday (Not available with FedEx First Overnight)

☐ Hold Saturday (Not available at all locations) (Available for FedEx Priority Overnight and FedEx 2Day only)

For WEEKEND Delivery check here (Extra Charge. Not available at all locations)

☐ Saturday Delivery (Available for FedEx Priority Overnight and FedEx 2Day only)

☐ NEW Sunday Delivery (Available for FedEx Priority Overnight only)

8 0 5 6 6 9 7 4 2 2 5 9

4a Express Package Service *Packages under 150 lbs.* Delivery commitment may be later in some areas.

☑ FedEx Priority Overnight (Next business morning)

☐ FedEx Standard Overnight (Next business afternoon)

☐ FedEx First Overnight (Earliest next business morning delivery to select locations) (Higher rates apply)

☐ FedEx 2Day (Second business day)

☐ FedEx Express Saver (Third business day)

FedEx Letter Rate not available. Minimum charge: One pound rate.

4b Express Freight Service *Packages over 150 lbs.* Delivery commitment may be later in some areas.

☐ FedEx Overnight Freight (Next business day)

☐ FedEx 2Day Freight (Second business day)

☐ FedEx Express Saver Freight (Up to 3 business days)

(Call for delivery schedule. See back for detailed descriptions of freight services.)

5 Packaging

☐ FedEx Letter (Declared value limit $500)

☑ FedEx Pak

☐ FedEx Box

☐ FedEx Tube

☑ Other Pkg.

6 Special Handling

Does this shipment contain dangerous goods?* (One box must be checked)

☑ No

☐ Yes (As per attached Shipper's Declaration)

☐ Yes (Shipper's declaration not required)

☐ Dry Ice — Dry Ice, 9, UN 1845 _____ x _____ kg.

☐ Cargo Aircraft Only

*Dangerous Goods cannot be shipped in FedEx packaging.

7 Payment

Bill to:

☑ Sender (Account No. in Section 1 will be billed)

☐ Recipient

☐ Third Party

☐ Credit Card

☐ Cash/Check

☐ Obtain Recipient FedEx Account No.

(Enter FedEx Account No. or Credit Card No. below)

Total Packages	Total Weight	Total Declared Value	Total Charges
1	34	$ .00	$

*When declaring a value higher than $100 per shipment, you pay an additional charge. See SERVICE CONDITIONS, DECLARED VALUE, AND LIMIT OF LIABILITY section for further information.

Credit Card Auth.

8 Release Signature

Your signature authorizes Federal Express to deliver this shipment without obtaining a signature and agrees to indemnify and hold harmless Federal Express from any resulting claims.

321

Questions?

Call 1-800-Go-FedEx® (800)463-3339

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004872810 ⊙

ORIGINAL (Red)

ORIGINAL (Red)

Region III, Office of Analytical Services and Quality Assurances
Annapolis, Maryland
HAZARD AND RISK-EXPOSURE DATA SHEET
LEVELS OF PERSONAL PROTECTION DURING SAMPLING

BACKGROUND

Under the authority Section 104 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) of 1980, Section 311 of the Clean Water Act, and Subtitle I of the Resource Conservation and Recovery Act (RCRA), EPA has been delegated the responsibility to undertake response actions with respect to the release or potential release of oil, petroleum, or hazardous substances that pose a substantial threat to human health or welfare, or the environment.

GENERAL

This form is to be used when collecting Environmental Samples (i.e. streams, farm ponds, wells, soils etc.) and for Hazardous Sample (i.e. drums, storage tanks, lagoons, leachates, hazardous waste sites). This information is intended for use as a guide for the safe handling of these laboratory samples in accordance with EPA and OSHA regulations. The sample classification(s) and levels of personal protection used by the sampler in all situations will enable the analyst to be better aware of potential exposure to substances in air, splashes of liquids, or other direct contact with material due to work being done.

DEGREE OF PROTECTION

____ Level A: Highest level of respiratory, skin, and eye protection needed. Fully encapsulated suit, respirator self-contained (Tank type).

____ Level B: Highest level of respiratory protection but lesser level of skin protection needed. Chemical suit, respirator self-contained (Tank type).

____ Level C: Lesser level of respiratory protection than Level B. Skin protection criteria are similar to Level B. Chemical suit, canister respirator/cartridge

X Level D: Work uniform without any respirator or skin hazards. Lab coat, gloves etc.

CLASSIFIED FIELD SAMPLES

X Environmental ____ Hazardous ____ Comb. (Env. & Haz.) ____ Radioactive

Site Name: RADFORD ARMY AMMUNITION PLANT Sampling Date: 4-1-98

Sta No. FB-02, RB-02, SD-03, SD-04, SD-05, SS-21, SS-20, ____, ____, ____

Field pH: REAGENT GRADE H_2O, REAGENT GRADE H_2O, NA, NA, NA, NA, NA, ____, ____, ____
(must be taken prior to submission of aqueous samples)

Sampler: CATHY DARE Work Phone Number: (610-771-0591

Personal observations at time of sampling (surroundings): Typical soil samples, no obvious signs of contamination, no discoloration, no distressed vegetation.

Sample collection observations (physical sample, odors etc.): No specific physical characteristics of concern, no odors.

FedEx *USA Airbill* FedEx Tracking Number 805669742086

Form LD. No. 0210 — **Recipient's Copy**

SP1441

1 From

Date 2 APR 98 [redacted]

Sender's Name (b) (4) [redacted] Phone (610) 771-0591

Company TECHLAW INC EH&S

Address 215 PRESIDENTIAL BLVD Dept./Floor/Suite/Room

City BALA CYNWYD State PA ZIP 19004-1201

2 Your Internal Billing Reference Information 09-068Y

3 To

Recipient's Name (b) (4) [redacted] Phone (410) 573-2600

Company OASQA Laboratory

Address 839 Bestgate Rd. ☐ Check here if residence (Extra charge applies for FedEx Express Saver)

(To "HOLD" at FedEx location, print FedEx address here) Dept./Floor/Suite/Room

City Annapolis State MD ZIP 21401

For HOLD at FedEx Location check here

☐ **Hold Weekday** (Not available with FedEx First Overnight)

☐ **Hold Saturday** (Not available at all locations) (Available for FedEx Priority Overnight and FedEx 2Day only)

For WEEKEND Delivery check here (Extra Charge. Not available at all locations)

☐ **Saturday Delivery** (Available for FedEx Priority Overnight and FedEx 2Day only)

☐ **NEW Sunday Delivery** (Available for FedEx Priority Overnight only)

805669742086

4a Express Package Service *Packages under 150 lbs.* Delivery commitment may be later in some areas.

☑ FedEx Priority Overnight (Next business morning)

☐ FedEx Standard Overnight (Next business afternoon)

☐ FedEx First Overnight (Earliest next business morning delivery to select locations) (Higher rates apply)

☐ FedEx 2Day (Second business day)

☐ FedEx Express Saver (Third business day)

FedEx Letter Rate not available. Minimum charge. One pound rate.

4b Express Freight Service *Packages over 150 lbs.* Delivery commitment may be later in some areas.

☐ FedEx Overnight Freight (Next business day)

☐ FedEx 2Day Freight (Second business day)

☐ FedEx Express Saver Freight (Up to 3 business days)

(Call for delivery schedule. See back for detailed descriptions of freight services.)

5 Packaging ☐ FedEx Letter ☐ FedEx Pak (Declared value limit $500.) ☐ FedEx Box ☐ FedEx Tube ☑ Other Pkg.

6 Special Handling (One box must be checked)

Does this shipment contain dangerous goods?* ☑ No ☐ Yes (As per attached Shipper's Declaration) ☐ Yes (Shipper's Declaration not required)

☐ Dry Ice — Dry Ice, 9, UN 1845 _____ x _____ kg.

☐ Cargo Aircraft Only

*Dangerous Goods cannot be shipped in FedEx packaging.

7 Payment ☐ Obtain Recipient FedEx Account No.

Bill to: ☑ Sender (Account No. in Section 1 will be billed) ☐ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check

(Enter FedEx Account No. or Credit Card No. below)

Total Packages	Total Weight	Total Declared Value*	Total Charges
1	82	$ .00	$

*When declaring a value higher than $100 per shipment, you pay an additional charge. See SERVICE CONDITIONS, DECLARED VALUE, AND LIMIT OF LIABILITY section for further information.

Credit Card Auth.

8 Release Signature

Your signature authorizes Federal Express to deliver this shipment without obtaining a signature and agrees to indemnify and hold harmless Federal Express from any resulting claims.

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Questions?

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ORIGINAL (Red)

ORIGINAL (Red)

Region III, Office of Analytical Services and Quality Assurances
Annapolis, Maryland
HAZARD AND RISK-EXPOSURE DATA SHEET
LEVELS OF PERSONAL PROTECTION DURING SAMPLING

BACKGROUND

Under the authority Section 104 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) of 1980, Section 311 of the Clean Water Act, and Subtitle I of the Resource Conservation and Recovery Act (RCRA), EPA has been delegated the responsibility to undertake response actions with respect to the release or potential release of oil, petroleum, or hazardous substances that pose a substantial threat to human health or welfare, or the environment.

GENERAL

This form is to be used when collecting Environmental Samples (i.e. streams, farm ponds, wells, soils etc.) and for Hazardous Sample (i.e. drums, storage tanks, lagoons, leachates, hazardous waste sites). This information is intended for use as a guide for the safe handling of these laboratory samples in accordance with EPA and OSHA regulations. The sample classification(s) and levels of personal protection used by the sampler in all situations will enable the analyst to be better aware of potential exposure to substances in air, splashes of liquids, or other direct contact with material due to work being done.

DEGREE OF PROTECTION

____ Level A: Highest level of respiratory, skin, and eye protection needed. Fully encapsulated suit, respirator self-contained (Tank type).

____ Level B: Highest level of respiratory protection but lesser level of skin protection needed. Chemical suit, respirator self-contained (Tank type).

____ Level C: Lesser level of respiratory protection than Level B. Skin protection criteria are similar to Level B. Chemical suit, canister respirator/cartridge

X Level D: Work uniform without any respirator or skin hazards. Lab coat, gloves etc.

CLASSIFIED FIELD SAMPLES

X Environmental ____ Hazardous ____ Comb. (Env. & Haz.) ____ Radioactive

Site Name: RADFORD ARMY AMMUNITION PLANT Sampling Date: 3-30-98, 3-31-98

Sta No. SW-07, WW-04, WW-106, WW-06, TB-01, RB-01, FB-01, REMAINING SOLIDS

Field pH: 7.64, 7.95, 7.10, 7.10, REAGENT GRADE H2O, REAGENT GRADE H2O, REAGENT GRADE H2O, —, NA, —
(must be taken prior to submission of aqueous samples)

(b) (4) [redacted] Work Phone Number: 610-771-0591

Personal observations at time of sampling (surroundings): Typical soil and water samples, no obvious signs of contamination, no stressed vegetation.

Sample collection observations (physical sample, odors etc.): No specific physical characteristics of concern. Soil sample SL-11 did have oily sheen, however no odor.

ORIGINAL (Red)

FedEx USA Airbill

FedEx Tracking Number 805669742260

Form I.D. No. 0210

SPH41

Recipient's Copy

1 From

Date 2 APR 98

Sender's Name (b) (4) [redacted] Phone (610) 771-0591

Company TECHLAW INC EH&S

Address 215 PRESIDENTIAL BLVD Dept./Floor/Suite/Room

City BALA CYNWYD State PA ZIP 19004-1201

2 Your Internal Billing Reference Information 09-068Y

3 To

Recipient's Name (b) (4) [redacted] Phone (410) 573-2600

Company OASQA LABORATORY

Address 839 Bestgate Rd ☐ Check here if residence (Extra charge applies for FedEx Express Saver)

(To "HOLD" at FedEx location, print FedEx address here) Dept./Floor/Suite/Room

City Annapolis State MD ZIP 21401

For HOLD at FedEx Location check here

☐ Hold Weekday (Not available with FedEx First Overnight) ☐ Hold Saturday (Not available at all locations) (Available for FedEx Priority Overnight and FedEx 2Day only)

For WEEKEND Delivery check here (Extra Charge. Not available at all locations)

☐ Saturday Delivery (Available for FedEx Priority Overnight and FedEx 2Day only) ☐ NEW Sunday Delivery (Available for FedEx Priority Overnight only)

805669742260

4a Express Package Service *Packages under 150 lbs.* Delivery commitment may be later in some areas.

☑ FedEx Priority Overnight (Next business morning) ☐ FedEx Standard Overnight (Next business afternoon)

☐ FedEx First Overnight (Earliest next business morning delivery to select locations) (Higher rates apply)

☐ FedEx 2Day (Second business day) ☐ FedEx Express Saver (Third business day)

FedEx Letter Rate not available. Minimum charge: One pound rate.

4b Express Freight Service *Packages over 150 lbs.* Delivery commitment may be later in some areas.

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(Call for delivery schedule. See back for detailed descriptions of freight services.)

5 Packaging ☐ FedEx Letter ☐ FedEx Pak (Declared value limit $500.) ☐ FedEx Box ☐ FedEx Tube ☑ Other Pkg.

6 Special Handling (One box must be checked)

Does this shipment contain dangerous goods?* ☑ No ☐ Yes (As per attached Shipper's Declaration) ☐ Yes (Shipper's Declaration not required)

☐ Dry Ice Dry Ice, 9, UN 1845 _____ x _____ kg ☐ Cargo Aircraft Only

*Dangerous Goods cannot be shipped in FedEx packaging.

7 Payment ☐ Obtain Recipient FedEx Account No.

Bill to: ☑ Sender (Account No. in Section 1 will be billed) ☐ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check

(Enter FedEx Account No. or Credit Card No. below)

Total Packages	Total Weight	Total Declared Value*	Total Charges
1	61	$ .00	$

*When declaring a value higher than $100 per shipment, you pay an additional charge. See SERVICE CONDITIONS, DECLARED VALUE, AND LIMIT OF LIABILITY section for further information.

Credit Card Auth.

8 Release Signature

Your signature authorizes Federal Express to deliver this shipment without obtaining a signature and agrees to indemnify and hold harmless Federal Express from any resulting claims.

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Questions?

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004872810 0

ORIGINAL (Red)

Gannett Fleming
ENGINEERS AND PLANNERS

GANNETT FLEMING, INC.
Suite 200
East Quadrangle
The Village of Cross Keys
Baltimore, MD 21210
Fax: (410) 433-6520
Office: (410) 433-8832

April 6, 1998

Mr. Arnold Turner
U.S. EPA, Region III
Office of Analytical Services and Quality Assurance (OASQA) Laboratory
839 Bestgate Road
Annapolis, Maryland 21401

Re: EPA Contract No.: 68-W6-0009
EPA Work Assignment: 13-298Y
Radford Army Ammunition Plant/New River, Virginia
EPA Region III
Shipping Date: April 2, 1998
Federal Express Airbill No.: 2894308093

Dear Mr. Turner:

The purpose of this letter is to correct errors on the EPA Chain-Of-Custody (COC) form numbered 316323 for the above referenced sample shipment to OASQA Laboratory. Two incorrect Station Numbers appear on this COC, on the fifth and sixth sample lines. The information presented on the original COC, and the correct Station Numbers are provided in the following table:

Incorrect Sta. No.	Correct Sta. No.	Date	Time	Station Location	Tag Numbers
TR-04E	TR-04F	4/2/98	1345	NR-TR-04F	3-2196447 and 3-2196448
TR-04ED	TR-04FD	4/2/98	1345	NR-TR-04FD	3-2196449 and 3-2196450

These samples were to be analyzed for BNA/PCBs/Pesticides.

Attached, please find a corrected copy of COC 316323.

I apologize for the inconvenience these discrepancies have caused.

Sincerely,
GANNETT FLEMING, INC.
(b) (4) [redacted]

(b) (4) [redacted]

APR 1998

cc: Carolyn Sierra Bernota (EPA Region III OASQA)
Robert Thomson (EPA Region III)
(b) (4) [redacted]

J:\ROC1\REG3\31113\MTF\040698A.MTF

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 3
841 Chestnut St.
Philadelphia, Pennsylvania 19107

page 1 of 1

CHAIN OF CUSTODY RECORD

PROJ. NO.: 13-2869

PROJECT NAME: RADFORD ARMY AMMUNITION PLANT

SAMPLERS: (Signature) Stanley J. Cuma / Robert W. Scrafford

V.S. DAS QA (CRL) Lab
839 Bestgate Road
Annapolis, MD 21401
Attn: Arnold Turner

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TCL BNA/PCB/PEST 4-oz Amber Jar	TCL BNA/PCB/PEST 4-oz Jar					REMARKS	TAG #
TR-05D	4/1/98	1445		X	NR-TR-05D	2	2							3-2196446 AND 3-2196445
TR-05B	4/1/98	1437		X	NR-TR-05B	2	2							3-2196443 AND 3-2196444
TR-05A	4/1/98	1430		X	NR-TR-05A	2	2							3-2196441 And 3-2196442
TR-09B	4/2/98	1405		X	NR-TR-09B	2	2							3-2196439 And 3-2196440
TR-04E	4/2/98	1345		X	NR-TR-04~~E~~F RWS 4/2/98	2	2						3-2196447 And 3-2196448	~~3-2196435 And 3-2196436~~
TR-04ED	4/2/98	1345		X	NR-TR-04~~ED~~FD RWS 4/2/98	2	2						3-2196449 And 3-2196450 RWS 4/2/98	~~3-2196437 And 3-2196438~~
TR-04A	4/2/98	1340		X	NR-TR-04A	2	2							3-2196433 And 3-2196434
TR-07C	4/2/98	1435		X	NR-TR-07C	2	2							3-2196431 And 3-2196432
TR-07A	4/2/98	1440		X	NR-TR-07A	2	2							3-2196429 And 3-2196430
TR-03E	4/2/98	1040		X	NR-TR-03E	2	2							3-2196427 And 3-2196428
TR-02C	4/2/98	1010		X	NR-TR-02C	2	2							3-2196425 And 3-2196426
TR-02A	4/2/98	1005		X	NR-TR-02A	2	2							3-2196423 And 3-2196424
TR-01B	4/2/98	0955		X	NR-TR-01B	2	2							3-2196421 And 3-2196422
TR-01A	4/2/98	0950		X	NR-TR-01A	2	2							3-2196419 And 3-2196420
TR-04E	4/2/98	1420		X	NR-TR-04E	2		2						3-2196499 And 3-2196500

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Robert W. Scrafford	4/2/98 1436	RECEIVED APR 14 1998			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	

Remarks: NR-TR-04~~E~~FD RWS 4/2/98 Duplicate of NR-TR-04~~E~~F RWS
Case is complete
Fed Ex Airbill #: 2994308093

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

ORIGINAL

3 16323

ORIGINAL (Red)

page 1 of 1

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

CHAIN OF CUSTODY RECORD

REGION 3
841 Chestnut St.
Philadelphia, Pennsylvania 19107

PROJ. NO.: 13-2864

PROJECT NAME: RADFORD ARMY AMMUNITION Plant

SAMPLERS: (Signature) Robert W. Scrafford

V.S. OAS QA (CRL) Lab
839 Bestgate Road
Annapolis, MD 21401
Attn: Arnold Turner

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TCL BNA/PCB/Pest 4-oz Amber Jar	TCL BNA/PCB/Pest 4-oz Jar					REMARKS	TAG #
TR-05D	4/1/98	1445		X	NR-TR-05D	2	2							3-2196446 AND 3-2196445
TR-05B	4/1/98	1437		X	NR-TR-05B	2	2							3-2196443 AND 3-2196444
TR-05A	4/1/98	1430		X	NR-TR-05A	2	2							3-2196441 And 3-2196442
TR-09B	4/2/98	1405		X	NR-TR-09B	2	2							3-2196439 And 3-2196440
4/6/98 F TR-04E	4/2/98	1345		X	NR-TR-04E F RWS 4/2/98	2	2						3-2196447 And 3-2196448	~~3-2196435 And 3-2196436~~
4/6/98 F TR-04D	4/2/98	1345		X	NR-TR-04E FD RWS 4/2/98	2	2						3-2196449 And 3-2196450 RWS 4/2/98	~~3-2196437 And 3-2196438~~
TR-04A	4/2/98	1340		X	NR-TR-04A	2	2							3-2196433 And 3-2196434
TR-07C	4/2/98	1435		X	NR-TR-07C	2	2							3-2196431 And 3-2196432
TR-07A	4/2/98	1440		X	NR-TR-07A	2	2							3-2196429 And 3-2196430
TR-03E	4/2/98	1040		X	NR-TR-03E	2	2							3-2196427 And 3-2196428
TR-02C	4/2/98	1010		X	NR-TR-02C	2	2							3-2196425 And 3-2196426
TR-02A	4/2/98	1005		X	NR-TR-02A	2	2							3-2196423 And 3-2196424
TR-01B	4/2/98	0955		X	NR-TR-01B	2	2							3-2196421 And 3-2196422
TR-01A	4/2/98	0950		X	NR-TR-01A	2	2							3-2196419 And 3-2196420
TR-04E	4/2/98	1420		X	NR-TR-04E	2		2						3-2196499 And 3-2196500

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Robert W. Scrafford	4/2/98 1436				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	

Remarks: NR-TR-04E FD RWS 4/2/98 Duplicate of NR-TR-04E F RWS
Case is Complete
Fed Ex Airbill #: 2994308093

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

2 16222

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

page 1 of 1

CHAIN OF CUSTODY RECORD

REGION 3
841 Chestnut St.
Philadelphia, Pennsylvania 19107

PROJ. NO.: 13-2886Y

PROJECT NAME: RADFORD ARMY AMMUNITION Plant

SAMPLERS: (Signature) Robert W. Scrafford, Stanley J. Curran

V.S. OAS QA (CRL) Lab
839 Bestgate Road
Annapolis, MD 21401
Attn: Arnold Turner

STA. NO.	DATE (RWS)	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TCL BNA/PCB/Pest 4-oz Amber Jar	TCL BNA/PCB/Pest 4-oz Clear					REMARKS / TAG #
TR-05D	4/1/98	1445		X	NR-TR-05D	2	2						3-2196446 AND 3-2196445
TR-05B	4/1/98	1437		X	NR-TR-05B	2	2						3-2196443 AND 3-2196444
TR-05A	4/1/98	1430		X	NR-TR-05A	2	2						3-2196441 And 3-2196442
TR-09B	4/2/98	1405		X	NR-TR-09B	2	2						3-2196439 And 3-2196440
TR-04E	4/2/98	1345		X	NR-TR-04~~E~~F RWS 4/2/98	2	2						3-2196447 And 3-2196448 ~~3-2196435 And 3-2196436~~
TR-04ED	4/2/98	1345		X	NR-TR-04~~ED~~FD RWS 4/2/98	2	2						3-2196449 And 3-2196450 RWS 4/2/98 ~~3-2196437 And 3-2196438~~
TR-04A	4/2/98	1340		X	NR-TR-04A	2	2						3-2196433 And 3-2196434
TR-07C	4/2/98	1435		X	NR-TR-07C	2	2						3-2196431 And 3-2196432
TR-07A	4/2/98	1440		X	NR-TR-07A	2	2						3-2196429 And 3-2196430
TR-03E	4/2/98	1040		X	NR-TR-03E	2	2						3-2196427 And 3-2196428
TR-02C	4/2/98	1010		X	NR-TR-02C	2	2						3-2196425 And 3-2196426
TR-02A	4/2/98	1005		X	NR-TR-02A	2	2						3-2196423 And 3-2196424
TR-01B	4/2/98	0955		X	NR-TR-01B	2	2						3-2196421 And 3-2196422
TR-01A	4/2/98	0950		X	NR-TR-01A	2	2						3-2196419 And 3-2196420
TR-04E	4/2/98	1420		X	NR-TR-04E	2		2					3-2196499 And 3-2196500

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Robert W. Scrafford	4/2/98 1436				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
				NR-TR-04~~ED~~FD RWS 4/2/98 Duplicate of NR-TR-04~~E~~F RWS (Rad) Case is Complete Fed Ex Airbill #: 2994308093	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

ORIGINAL

2 16222

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

page 1 of 1

CHAIN OF CUSTODY RECORD

REGION 3
841 Chestnut St.
Philadelphia, Pennsylvania 19107

PROJ. NO.: 13-2869

PROJECT NAME: RADFORD ARMY AMMUNITION Plant

SAMPLERS: (Signature) Robert W. Scrafford, Stanley J. Cuma

V.S. OAS QA (CRL) Lab
839 Bestgate Road
Annapolis, MD 21401
Attn: Arnold Turner

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TCL BNA/PCB/PEST	TCL BNA/PCB/PEST 4-oz Amber Jar 4-oz Clear						REMARKS	TAG #
TR-05D	4/1/98	1445		X	NR-TR-05D	2	2								3-2196446 AND 3-2196445
TR-05B	4/1/98	1437		X	NR-TR-05B	2	2								3-2196443 AND 3-2196444
TR-05A	4/1/98	1430		X	NR-TR-05A	2	2								3-2196441 And 3-2196442
TR-09B	4/2/98	1405		X	NR-TR-09B	2	2								3-2196439 And 3-2196440
TR-04E 4/6/98 F	4/2/98	1345		X	NR-TR-04E F RWS 4/2/98	2	2							3-2196447 And 3-2196448	~~3-2196435 And 3-2196436~~
TR-04D 4/6/98 F	4/2/98	1345		X	NR-TR-04D FD RWS 4/2/98	2	2							3-2196449 And 3-2196450	~~3-2196437 And 3-2196438~~
TR-04A	4/2/98	1340		X	NR-TR-04A	2	2								3-2196433 And 3-2196434
TR-07C	4/2/98	1435		X	NR-TR-07C	2	2								3-2196431 And 3-2196432
TR-07A	4/2/98	1440		X	NR-TR-07A	2	2								3-2196429 And 3-2196430
TR-03E	4/2/98	1040		X	NR-TR-03E	2	2								3-2196427 And 3-2196428
TR-02C	4/2/98	1010		X	NR-TR-02C	2	2								3-2196425 And 3-2196426
TR-02A	4/2/98	1005		X	NR-TR-02A	2	2								3-2196423 And 3-2196424
TR-01B	4/2/98	0955		X	NR-TR-01B	2	2								3-2196421 And 3-2196422
TR-01A	4/2/98	0950		X	NR-TR-01A	2	2								3-2196419 And 3-2196420
TR-04E	4/2/98	1420		X	NR-TR-04E	2		2							3-2196499 And 3-2196500

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Robert W. Scrafford	4/7/98 1436				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	

Remarks: NR-TR-04E FD RWS 4/2/98 Duplicate of NR-TR-04E F RWS
Case is complete
Fed Ex Airbill #: 2894308073

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

3 16323

Gannett Fleming
ENGINEERS AND PLANNERS

GANNETT FLEMING, INC.
Suite 200
East Quadrangle
The Village of Cross Keys
Baltimore, MD 21210
Fax: (410) 433-6520
Office: (410) 433-8832

ORIGINAL (Red)

April 6, 1998

Mr. Arnold Turner
U.S. EPA, Region III
Office of Analytical Services and Quality Assurance (OASQA) Laboratory
839 Bestgate Road
Annapolis, Maryland 21401

Re: EPA Contract No.: 68-W6-0009
EPA Work Assignment: 13-298Y
Radford Army Ammunition Plant/New River, Virginia
EPA Region III
Shipping Date: April 2, 1998
Federal Express Airbill No.: 2894308093

Dear Mr. Turner:

The purpose of this letter is to correct errors on the EPA Chain-Of-Custody (COC) form numbered 316323 for the above referenced sample shipment to OASQA Laboratory. Two incorrect Station Numbers appear on this COC, on the fifth and sixth sample lines. The information presented on the original COC, and the correct Station Numbers are provided in the following table:

Incorrect Sta. No.	Correct Sta. No.	Date	Time	Station Location	Tag Numbers
TR-04E	TR-04F	4/2/98	1345	NR-TR-04F	3-2196447 and 3-2196448
TR-04ED	TR-04FD	4/2/98	1345	NR-TR-04FD	3-2196449 and 3-2196450

These samples were to be analyzed for BNA/PCBs/Pesticides.

Attached, please find a corrected copy of COC 316323.

I apologize for the inconvenience these discrepancies have caused.

Sincerely,
GANNETT FLEMING, INC.
(b) (4) [redacted]

(b) (4) [redacted]

cc: Carolyn Sierra Bernota (EPA Region III OASQA)
Robert Thomson (EPA Region III)
Frank Swit (GF)

J:\ROC1\REG3\31113\MTF\040698A.MTF