

**APPENDIX K**

**SUMMARY STATISTICS FOR BACKGROUND MEDIA,  
FORT McCLELLAN, ALABAMA**

**Table 4-12. Summary Statistics for Surface Soil (0 -1 BLS)  
Fort McClellan, Alabama**

Run Time: 8:18:07 AM														
Run Date: 7/10/98														
Exposure Unit: SS														
Parameter	Units	Total	Total	Frequency of Detection	NonDetects		Detects		Arithmetic Mean <sup>a</sup>	Standard Deviation <sup>a</sup>	Distribution <sup>b</sup>	95% UCL of Arith. Mean <sup>a</sup>	Exposure Point Concentration <sup>c</sup>	2x Arithmetic Mean <sup>a</sup>
		Number of Samples	Number of Detects		Min CRL	Max CRL	Minimum	Maximum						
Aluminum	ug/g	70	70	100%	--	--	2,400	39,900	8,153.00	6,095	Lognormal	11,187	11,187	16,306
Antimony	ug/g	69	47	68%	0.082	7.1	0.11	2.6	0.99	1.3	Lognormal	3.4	2.6	# 1.99
Arsenic	ug/g	66	66	100%	--	--	0.82	49	6.86	8.0	Lognormal	13	13	13.73
Barium	ug/g	70	70	100%	--	--	11	288	61.97	54	Lognormal	99	99	123.94
Beryllium	ug/g	54	54	100%	--	--	0.082	0.87	0.40	0.22	Lognormal	0.61	0.61	0.80
Cadmium	ug/g	70	45	64%	0.016	1.2	0.024	0.21	0.14	0.16	Lognormal	0.36	0.21	# 0.29
Calcium	ug/g	70	66	94%	75	100	63	17,900	861.37	2,265	Lognormal	1,942	1,942	1,723
Chromium	ug/g	70	70	100%	--	--	2.0	134	18.52	20	Lognormal	31	31	37.04
Cobalt	ug/g	70	68	97%	1.4	1.4	0.39	71	7.57	12	Lognormal	18	18	15.16
Copper	ug/g	70	69	99%	0.50	0.50	1.3	24	6.36	4.4	Lognormal	11	11	12.71
Iron	ug/g	70	70	100%	--	--	2,510	56,300	17,076.86	11,577	Lognormal	27,000	27,000	34,154
Lead	ug/g	70	70	100%	--	--	2.9	83	20.02	15	Lognormal	33	33	40.05
Magnesium	ug/g	70	70	100%	--	--	60	9,600	516.49	1,266	Lognormal	768	768	1,033
Manganese	ug/g	70	70	100%	--	--	8.0	6,850	789.46	1,192	Lognormal	3,183	3,183	1,579
Mercury	ug/g	70	23	33%	0.023	0.050	0.031	0.32	0.04	0.046	Lognormal	0.058	0.058	0.08
Nickel	ug/g	70	56	80%	1.8	2.3	1.8	22	5.17	4.2	Lognormal	9.7	9.7	10.33
Potassium	ug/g	70	60	86%	82	116	104	6,010	399.88	946	Lognormal	607	607	799.76
Selenium	ug/g	70	1	1%	0.25	0.58	1.3	1.3	0.24	0.14	Lognormal	0.29	0.29	0.48
Silver	ug/g	70	42	60%	0.016	0.80	0.019	1.9	0.18	0.34	Lognormal	0.70	0.70	0.36
Sodium	ug/g	70	66	94%	39	39	76	563	317.14	98	Lognormal	562	562	634.28
Thallium	ug/g	68	55	81%	6.6	6.6	0.015	34	1.71	5.9	Lognormal	12	12	3.43
Vanadium	ug/g	70	70	100%	--	--	4.7	158	29.42	26	Lognormal	48	48	58.84
Zinc	ug/g	70	64	91%	4.9	11	4.6	209	20.32	26	Lognormal	35	35	40.64

<sup>a</sup>Results of duplicate analyses were averaged and nondetects were treated as one-half the detection limit in the calculation of the arithmetic mean, standard deviation, and 95% UCL.

<sup>b</sup>For the calculation of exposure point concentrations (EPCs):

If fewer than four samples are available, or the standard deviation of the data set is zero, the distribution is undetermined.

If the probability plot correlation coefficient of the untransformed data is > or = to the critical value, the distribution is normal.

In all other cases, the distribution assumed for the EPC calculation was lognormal.

<sup>c</sup>The exposure point concentration (EPC) is the 95% upper confidence (UCL) of the arithmetic mean, unless the 95% UCL exceeds the maximum detected value.

If the latter is true, the maximum detected value is substituted as the EPC (denoted by a "#" next to the EPC).

-- Parameter detected in all samples.

**Table 4-13. Summary Statistics for Subsurface Soil (>1-10 feet BLS)  
Fort McClellan, Alabama**

Run Time: 8:18:07 AM														
Run Date: 7/10/98														
Exposure Unit: SD		Total	Total	Frequency	NonDetects		Detects		Arithmetic	Standard		95% UCL of	Exposure	
Parameter	Units	Number of Samples	Number of Detects	of Detection	Min CRL	Max CRL	Minimum	Maximum	Mean <sup>a</sup>	Deviation <sup>a</sup>	Distribution <sup>b</sup>	Arith. Mean <sup>a</sup>	Point Concentration <sup>c</sup>	2x Arithmetic Mean <sup>a</sup>
Aluminum	ug/g	64	64	100%	--	--	1.690	24.600	6,795.47	3,552	Lognormal	9,068	9,068	13,591
Antimony	ug/g	63	46	73%	0.079	7.1	0.082	0.99	0.65	0.98	Lognormal	1.8	0.99	# 1.31
Arsenic	ug/g	64	61	95%	0.25	0.45	0.77	38	9.15	9.7	Lognormal	36	36	18.30
Barium	ug/g	64	64	100%	--	--	4.1	4,500	116.81	562	Lognormal	161	161	233.62
Beryllium	ug/g	59	57	97%	0.051	0.053	0.041	2.0	0.43	0.43	Lognormal	0.94	0.94	0.86
Cadmium	ug/g	64	35	55%	0.015	1.2	0.020	1.3	0.11	0.21	Lognormal	0.30	0.30	0.22
Calcium	ug/g	64	44	69%	57	200	67	3,650	318.58	606	Lognormal	772	772	637.17
Chromium	ug/g	64	64	100%	--	--	5.5	55	19.13	11	Lognormal	27	27	38.25
Cobalt	ug/g	64	60	94%	0.23	1.4	0.26	96	8.77	16	Lognormal	34	34	17.54
Copper	ug/g	64	64	100%	--	--	1.3	61	9.72	9.1	Lognormal	16	16	19.43
Iron	ug/g	64	64	100%	--	--	4,840	48,000	22,408.44	10,436	Normal	24,586	24,586	44,817
Lead	ug/g	64	64	100%	--	--	0.96	500	19.27	61	Lognormal	27	27	38.53
Magnesium	ug/g	64	60	94%	100	200	35	5,940	383.12	885	Lognormal	638	638	766.24
Manganese	ug/g	64	63	98%	4.1	4.1	7.3	19,000	677.67	2,417	Lognormal	3,864	3,864	1,355
Mercury	ug/g	64	31	48%	0.022	0.050	0.022	0.12	0.03	0.025	Lognormal	0.053	0.053	0.07
Nickel	ug/g	64	51	80%	1.6	2.2	2.2	38	6.45	7.8	Lognormal	13	13	12.89
Potassium	ug/g	64	52	81%	75	110	98	6,150	355.37	774	Lognormal	660	660	710.74
Selenium	ug/g	64	1	2%	0.25	0.58	0.55	0.55	0.24	0.060	Lognormal	0.27	0.27	0.47
Silver	ug/g	64	40	63%	0.016	1.2	0.021	0.66	0.12	0.15	Lognormal	0.47	0.47	0.24
Sodium	ug/g	64	63	98%	39	39	203	643	351.05	118	Lognormal	471	471	702.10
Thallium	ug/g	63	55	87%	0.0090	6.6	0.0090	24	0.70	3.0	Lognormal	2.0	2.0	1.40
Vanadium	ug/g	64	64	100%	--	--	8.7	99	32.45	20	Lognormal	47	47	64.89
Zinc	ug/g	64	50	78%	4.0	8.0	5.6	89	17.43	17	Lognormal	39	39	34.86

<sup>a</sup>Results of duplicate analyses were averaged and nondetects were treated as one-half the detection limit in the calculation of the arithmetic mean, standard deviation, and 95% UCL.

<sup>b</sup>For the calculation of exposure point concentrations (EPCs):

- If fewer than four samples are available, or the standard deviation of the data set is zero, the distribution is undetermined.
- If the probability plot correlation coefficient of the untransformed data is > or = to the critical value, the distribution is normal.
- In all other cases, the distribution assumed for the EPC calculation was lognormal.

<sup>c</sup>The exposure point concentration (EPC) is the 95% upper confidence (UCL) of the arithmetic mean, unless the 95% UCL exceeds the maximum detected value.

If the latter is true, the maximum detected value is substituted as the EPC (denoted by a "#" next to the EPC).

-- Parameter detected in all samples.

**Table 4-9. Summary Statistics for Background Groundwater  
Fort McClellan, Alabama**

Run Time: 4:50:27 PM														
Run Date: 7/9/98														
Exposure Unit: WD														
Parameter	Units	Total Number of Samples	Total Number of Detects	Frequency of Detection	NonDetects		Detects		Arithmetic Mean <sup>a</sup>	Standard Deviation <sup>a</sup>	Distribution <sup>b</sup>	95% UCL of Arith. Mean <sup>a</sup>	Exposure	
					Min CRL	Max CRL	Minimum	Maximum					Point Concentration <sup>c</sup>	2x Arithmetic Mean <sup>a</sup>
Alkalinity-phenolphthalein	µg/L	33	2	6%	5,000	5,000	104,000	132,000	9,500.00	28,204	Lognormal	9,763	9,763	19,000
Aluminum	µg/L	57	34	60%	50	141	59	9,600	1,167.66	2,030	Lognormal	19,988	9,600	# 2,335
Antimony	µg/L	57	2	4%	0.60	10.0	0.70	0.80	1.60	1.7	Lognormal	4.4	0.80	# 3.191
Arsenic	µg/L	57	10	18%	1.1	2.5	1.5	224	8.88	41	Lognormal	6.1	6.1	17.764
Barium	µg/L	57	53	93%	6.5	18	5.5	401	63.73	88	Lognormal	144	144	127.458
Beryllium	µg/L	57	15	26%	0.20	5.0	0.20	2.4	0.62	0.74	Lognormal	1.8	1.8	1.247
Bicarbonate	µg/L	33	22	67%	5,000	172,000	9,000	392,000	100,818.18	93,836	Lognormal	831,264	392,000	# 201,636
Bromide	µg/L	33	4	12%	200	200	278	715	138.03	121	Lognormal	171	171	276.06
Cadmium	µg/L	57	22	39%	0.100	5.0	0.100	5.3	1.26	1.2	Lognormal	10	5.3	# 2.51
Calcium	µg/L	57	48	84%	231	33,900	217	452,000	28,246.44	60,264	Lognormal	580,060	452,000	# 56,493
Chloride	µg/L	33	24	73%	923	2,640	1,080	11,000	2,446.06	2,363	Lognormal	4,347	4,347	4,892
Cobalt	µg/L	57	3	5%	20	25	20	25	11.68	2.8	Lognormal	13	13	23.36
Copper	µg/L	57	10	18%	5.0	19	5.3	235	12.74	32	Lognormal	21	21	25.48
Fluoride	µg/L	33	6	18%	200	200	202	646	146.24	124	Lognormal	185	185	292.48
Iron	µg/L	57	44	77%	45	78	2.5	25,800	3,520.25	5,364	Lognormal	590,286	25,800	# 7,040
Lead	µg/L	57	25	44%	0.60	4.5	0.60	27	4.00	6.1	Lognormal	13	13	7.998
Magnesium	µg/L	57	47	82%	100	18,400	176	149,000	10,640.88	19,972	Lognormal	146,372	146,372	21,282
Manganese	µg/L	57	42	74%	5.0	9.7	9.8	5,820	290.25	809	Lognormal	7,221	5,820	# 580.5
Nitrate,Nitrite	µg/L	33	4	12%	10.0	1,110	430	771	141.26	219	Lognormal	1,192	771	# 282.5
Potassium	µg/L	57	43	75%	270	1,240	1.0	68,500	3,597.54	9,508	Lognormal	18,602	18,602	7,195
Silver	µg/L	57	1	2%	0.100	10.0	0.40	0.40	2.00	2.4	Lognormal	141	0.40	# 4.00
Sodium	µg/L	57	52	91%	892	1,180	555	64,700	7,423.18	11,765	Lognormal	23,173	23,173	14,846
Sulfate	µg/L	33	25	76%	1000	3,680	1,650	1.4E+06	51,828.33	242,827	Lognormal	88,195	88,195	103,257
Thallium	µg/L	54	7	13%	0.100	10.0	0.100	5.3	0.73	1.2	Lognormal	5.3	5.3	1.455
Total Alkalinity	µg/L	33	22	67%	5,000	172,000	9,000	392,000	103,424.24	93,707	Lognormal	880,230	392,000	# 206,848
Total Phosphorous	µg/L	33	21	64%	10.0	10.0	10.0	282	44.30	70	Lognormal	140	140	88.594
Vanadium	µg/L	57	2	4%	10.0	28	11	11	8.49	4.3	Lognormal	11	11	16.975
Zinc	µg/L	57	25	44%	18	30	22	1,160	109.98	249	Lognormal	273	273	219.97

<sup>a</sup>Results of duplicate analyses were averaged and nondetects were treated as one-half the detection limit in the calculation of the arithmetic mean, standard deviation, and 95% UCL.

<sup>b</sup>For the calculation of exposure point concentrations (EPCs):

If fewer than four samples are available, or the standard deviation of the data set is zero, the distribution is undetermined.

If the probability plot correlation coefficient of the untransformed data is  $>$  or  $=$  to the critical value, the distribution is normal.

In all other cases, the distribution assumed for the EPC calculation was lognormal.

<sup>c</sup>The exposure point concentration (EPC) is the 95% upper confidence (UCL) of the arithmetic mean, unless the 95% UCL exceeds the maximum detected value.

If the latter is true, the maximum detected value is substituted as the EPC (denoted by a "#" next to the EPC).

- - Parameter detected in all samples.

**Table 4-10. Summary Statistics for Background Surface Water  
Fort McClellan, Alabama**

Parameter	Units	Total Number of Samples	Total Number of Detects	Frequency of Detection	NonDetects		Detects		Arithmetic Mean <sup>a</sup>	Standard Deviation <sup>a</sup>	Distribution <sup>b</sup>	Exposure		2x Arithmetic Mean <sup>a</sup>
					Min CRL	Max CRL	Minimum	Maximum				95% UCL of Arith. Mean <sup>a</sup>	Point Concentration <sup>c</sup>	
Aluminum	µg/L	67	57	85%	50	141	65	47,800	2,629.59	7.921	Lognormal	17,831	17,831	5,259
Arsenic	µg/L	65	9	14%	1.1	2.4	1.4	11	1.08	1.5	Lognormal	1.5	1.5	2.17
Barium	µg/L	67	67	100%	--	--	11	200	37.68	35	Lognormal	55	55	75.36
Beryllium	µg/L	56	9	16%	0.20	0.20	0.20	3.2	0.19	0.43	Lognormal	0.22	0.22	0.39
Bicarbonate	µg/L	56	40	71%	5,000	5,000	6,000	172,000	53,178.57	57,480	Lognormal	449,171	172,000	# 106,357
Cadmium	µg/L	67	10	15%	0.20	6.8	0.20	1.5	0.57	0.91	Lognormal	1.4	1.4	1.13
Calcium	µg/L	67	67	100%	--	--	179	64,100	12,583.19	13,701	Lognormal	218,721	64,100	# 25,166
Chloride	µg/L	56	56	100%	--	--	467	10,100	1,943.05	1,815	Lognormal	2,656	2,656	3,886
Chromium	µg/L	64	1	2%	6.0	17	14	14	5.56	1.7	Undetermined	6.3	6.3	11.13
Copper	µg/L	56	8	14%	5.0	8.1	7.1	72	6.35	13	Lognormal	8.1	8.1	12.70
Fluoride	µg/L	56	6	11%	100	200	128	579	107.86	85	Lognormal	139	139	215.71
Iron	µg/L	67	64	96%	45	78	74	232,000	9,814.08	37,961	Lognormal	46,205	46,205	19,628
Lead	µg/L	66	34	52%	0.60	4.5	0.60	47	4.33	8.3	Lognormal	19	19	8.67
Magnesium	µg/L	67	67	100%	--	--	171	24,400	5,486.16	5,916	Lognormal	34,551	24,400	# 10,972
Manganese	µg/L	67	64	96%	5.0	9.7	5.5	6,060	282.42	840	Lognormal	1,153	1,153	564.85
Nickel	µg/L	67	3	4%	15	34	40	70	11.23	11	Lognormal	14	14	22.46
Nitrate,Nitrite	µg/L	56	44	79%	10.0	10.0	11	838	106.09	181	Lognormal	507	507	212.18
Potassium	µg/L	67	61	91%	1,240	1,240	330	7,120	1,281.85	1,157	Lognormal	1,940	1,940	2,564
Sodium	µg/L	66	66	100%	--	--	296	15,200	1,718.44	2,043	Lognormal	2,401	2,401	3,437
Sulfate	µg/L	56	56	100%	--	--	1,060	62,400	4,313.57	8,203	Lognormal	5,784	5,784	8,627
Thallium	µg/L	59	1	2%	0.100	125	4.2	4.2	1.24	8.1	Undetermined	0.56	0.56	2.49
Total Alkalinity	µg/L	56	40	71%	5,000	5,000	6,000	172,000	53,178.57	57,480	Lognormal	449,171	172,000	# 106,357
Total Phosphorous	µg/L	56	24	43%	10.0	14	11	655	38.82	99	Lognormal	87	87	77.64
Vanadium	µg/L	63	5	8%	10.0	28	13	36	7.60	5.7	Lognormal	9.8	9.8	15.21
Zinc	µg/L	66	6	9%	18	30	27	182	20.17	26	Lognormal	24	24	40.35

<sup>a</sup>Results of duplicate analyses were averaged and nondetects were treated as one-half the detection limit in the calculation of the arithmetic mean, standard deviation, and 95% UCL.

<sup>b</sup>For the calculation of exposure point concentrations (EPCs):

If fewer than four samples are available, or the standard deviation of the data set is zero, the distribution is undetermined.

If the probability plot correlation coefficient of the untransformed data is > or = to the critical value, the distribution is normal.

In all other cases, the distribution assumed for the EPC calculation was lognormal.

<sup>c</sup>The exposure point concentration (EPC) is the 95% upper confidence (UCL) of the arithmetic mean, unless the 95% UCL exceeds the maximum detected value.

If the latter is true, the maximum detected value is substituted as the EPC (denoted by a "#" next to the EPC).

-- Parameter detected in all samples.

**Table 4-11. Summary Statistics for Background Sediment  
Fort McClellan, Alabama**

Run Time: 5:01:01 PM														
Run Date: 7/9/98														
Exposure Unit: DS														
Parameter	Units	Total	Total	Frequency of Detection	NonDetects		Detects		Arithmetic Mean <sup>a</sup>	Standard Deviation <sup>a</sup>	Distribution <sup>b</sup>	95% UCL of Arith. Mean <sup>a</sup>	Exposure	2x Arithmetic Mean <sup>a</sup>
		Number of Samples	Number of Detects		Min CRL	Max CRL	Minimum	Maximum					Point Concentration <sup>c</sup>	
Aluminum	ug/g	65	65	100%	--	--	657	17,400	4,296.32	3,138	Lognormal	6,591	6,590.77	8,593
Antimony	ug/g	59	40	68%	0.11	1.00	0.12	1.2	0.38	0.25	Lognormal	0.77	0.77	0.73
Arsenic	ug/g	58	58	100%	--	--	0.21	20	5.67	5.0	Lognormal	13	13.34	11.33
Barium	ug/g	65	65	100%	--	--	5.4	272	49.46	44	Lognormal	86	85.64	98.91
Beryllium	ug/g	55	55	100%	--	--	0.069	1.2	0.49	0.30	Lognormal	0.83	0.83	0.97
Cadmium	ug/g	65	47	72%	0.020	1.2	0.020	2.4	0.22	0.39	Lognormal	0.67	0.67	0.43
Calcium	ug/g	65	61	94%	60	99	88	2,810	555.76	557	Lognormal	1,370	1,369.94	1,111.51
Chromium	ug/g	65	65	100%	--	--	1.1	63	15.57	14	Lognormal	30	29.80	31.15
Cobalt	ug/g	64	59	92%	0.24	2.5	0.40	22	5.51	4.5	Lognormal	15	14.80	11.01
Copper	ug/g	61	60	98%	2.8	2.8	0.73	59	8.56	8.8	Lognormal	16	15.75	17.12
Iron	ug/g	65	65	100%	--	--	683	57,500	17,633.26	12,838	Lognormal	38,392	36,391.61	35,267
Lead	ug/g	62	61	98%	7.4	7.4	1.7	110	18.91	20	Lognormal	35	35.40	37.82
Magnesium	ug/g	65	65	100%	--	--	30	3,270	452.97	686	Lognormal	952	952.13	905.94
Manganese	ug/g	64	62	97%	4.2	5.0	8.7	2,050	356.15	385	Lognormal	1,735	1,735.37	712.31
Mercury	ug/g	65	37	57%	0.024	0.061	0.047	0.28	0.06	0.042	Lognormal	0.087	0.09	0.11
Nickel	ug/g	65	43	66%	2.1	5.3	2.4	33	6.51	6.9	Lognormal	14	14.02	13.02
Potassium	ug/g	65	46	71%	100	151	118	4,810	506.74	842	Lognormal	1,273	1,272.69	1,013.48
Selenium	ug/g	65	4	6%	0.25	1.2	0.72	1.9	0.36	0.29	Lognormal	0.44	0.44	0.72
Silver	ug/g	65	37	57%	0.018	0.80	0.021	1.1	0.16	0.21	Lognormal	0.73	0.73	0.32
Sodium	ug/g	65	57	88%	39	60	173	738	346.14	152	Lognormal	942	738.00	# 692.29
Thallium	ug/g	58	58	100%	--	--	0.012	0.22	0.06	0.047	Lognormal	0.098	0.10	0.13
Vanadium	ug/g	65	65	100%	--	--	2.6	67	20.44	13	Lognormal	34	33.66	40.87
Zinc	ug/g	65	58	89%	5.3	6.9	6.0	111	26.37	24	Lognormal	56	55.67	52.74

<sup>a</sup>Results of duplicate analyses were averaged and nondetects were treated as one-half the detection limit in the calculation of the arithmetic mean, standard deviation, and 95% UCL.

<sup>b</sup>For the calculation of exposure point concentrations (EPCs):

If fewer than four samples are available, or the standard deviation of the data set is zero, the distribution is undetermined.

If the probability plot correlation coefficient of the untransformed data is > or = to the critical value, the distribution is normal.

In all other cases, the distribution assumed for the EPC calculation was lognormal.

<sup>c</sup>The exposure point concentration (EPC) is the 95% upper confidence (UCL) of the arithmetic mean, unless the 95% UCL exceeds the maximum detected value.

If the latter is true, the maximum detected value is substituted as the EPC (denoted by a "#" next to the EPC).

-- Parameter detected in all samples.