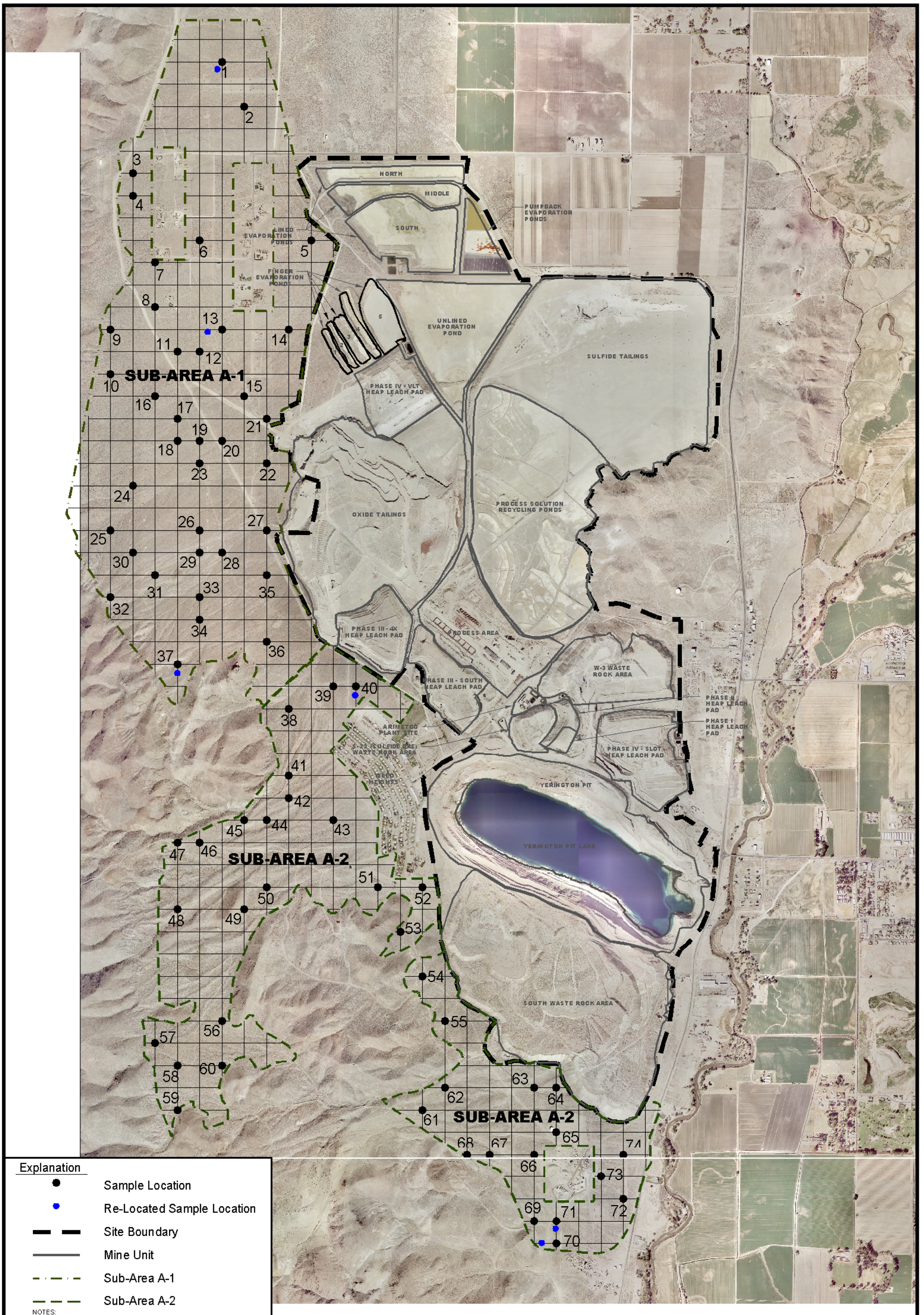
Appendix A-5
Native Alluvium West of Site



Explanation

- Sample Location
- Re-Located Sample Location
- Site Boundary
- Mine Unit
- Sub-Area A-1
- Sub-Area A-2

NOTES:
1. PROJECTION NEVADA STATE PLANE, WEST ZONE 1927 NORTH AMERICAN DATUM (FEET)
2. BASE PHOTO TAKEN OCTOBER 2001

BROWN AND CALDWELL

Date: Sept 2008

Atlantic Richfield Company

Project: 134588

N W E S

1,000 0 1,000 2,000 FEET

Figure 3-1

Background Soil Sample Locations

P:\Arco-Yerington\Background Soils\134558 - Year 2008 Files\CAD\Drawings\September 2008\Figure 3-1.dwg Sep 04, 2008 - 2:13pm rjohnson

Table 5-1. Summary Statistics and Results of Two-Sample Comparisons

	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Radium-226	Radium-228	Selenium	Silver	Sodium	Thallium	Thorium	Uranium	Vanadium	Zinc
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(pCi/g)	(pCi/g)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Sub-area A-1																													
Number of observations	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74
Number of detects	74	0	65	74	67	21	0	74	55	74	74	74	74	74	74	6	29	66	74	74	74	1	0	74	7	74	74	74	67
Percent detects	100	0	88	100	91	28	0	100	74	100	100	100	100	100	100	8	39	89	100	100	100	1	0	100	9	100	100	100	91
Minimum detect	4300	n/a	1.8	38	0.21	2.4	n/a	1700	1.8	1.7	4.5	6800	2.4	1500	140	0.013	0.41	2.3	610	0.705	0.796	1.2	n/a	65	0.47	4.1	0.57	8.0	11
Maximum detect	16000	n/a	21	180	1.1	38	n/a	39000	13	14	68	22000	11	6600	550	0.052	3.6	12	3000	2.04	1.84	1.2	n/a	2700	0.76	18.2	3.9	65	58
Number of nondetects	0	74	9	0	7	53	74	0	19	0	0	0	0	0	0	68	45	8	0	0	0	73	74	0	67	0	0	0	7
Percent nondetects	0	100	12	0	9	72	100	0	26	0	0	0	0	0	0	92	61	11	0	0	0	99	100	0	91	0	0	0	9
Minimum nondetect	n/a	0.89	1.8	n/a	0.20	2.1	0.30	n/a	1.8	n/a	n/a	n/a	n/a	n/a	n/a	0.012	0.40	2.3	n/a	n/a	n/a	0.75	0.50	n/a	0.40	n/a	n/a	n/a	27
Maximum nondetect	n/a	0.94	1.8	n/a	0.20	2.2	0.32	n/a	12	n/a	n/a	n/a	n/a	n/a	n/a	0.013	0.42	2.3	n/a	n/a	n/a	0.80	0.54	n/a	0.43	n/a	n/a	n/a	43
Sub-area A-2																													
Number of observations	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74
Number of detects	74	0	68	73	69	36	0	74	61	74	74	74	74	74	74	11	47	74	74	74	74	3	0	71	5	74	74	74	50
Percent detects	100	0	92	99	93	49	0	100	82	100	100	100	100	100	100	15	64	100	100	100	100	4	0	96	7	100	100	100	68
Minimum detect	4100	n/a	2.2	35	0.22	2.4	n/a	2100	2.4	2.5	9.2	7300	2	1800	110	0.015	0.41	3.2	450	0.697	0.556	0.80	n/a	93	0.42	3.8	0.63	7.3	11
Maximum detect	28000	n/a	22	520	2.0	27	n/a	79000	19	22	350	28000	19	12000	1300	0.074	4.5	20	6300	2.51	1.77	0.98	n/a	3500	0.84	28.2	5.9	66	66
Number of nondetects	0	74	6	1	5	38	74	0	13	0	0	0	0	0	0	63	27	0	0	0	0	71	74	3	69	0	0	0	24
Percent nondetects	0	100	8	1	7	51	100	0	18	0	0	0	0	0	0	85	36	0	0	0	0	96	100	4	93	0	0	0	32
Minimum nondetect	n/a	0.88	1.8	40	0.20	2.1	0.30	n/a	1.8	n/a	n/a	n/a	n/a	n/a	n/a	0.012	0.39	n/a	n/a	n/a	n/a	0.74	0.49	150	0.39	n/a	n/a	n/a	17
Maximum nondetect	n/a	1.8	1.8	40	0.21	7.8	0.35	n/a	8.4	n/a	n/a	n/a	n/a	n/a	n/a	0.014	0.42	n/a	n/a	n/a	n/a	0.88	0.58	240	0.44	n/a	n/a	n/a	61
Sub-areas A-1 and A-2 Combined																													
Number of observations	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148
Number of detects	148	0	133	147	136	57	0	148	116	148	148	148	148	148	148	17	76	140	148	148	148	4	0	145	12	148	148	148	117
Percent detects	100	0	90	99	92	39	0	100	78	100	100	100	100	100	100	11	51	95	100	100	100	3	0	98	8	100	100	100	79
Minimum detect	4100	n/a	1.8	35	0.21	2.4	n/a	1700	1.8	1.7	4.5	6800	2	1500	110	0.013	0.41	2.3	450	0.697	0.556	0.80	n/a	65	0.42	3.8	0.57	7.3	11
Maximum detect	28000	n/a	22	520	2.0	38	n/a	79000	19	22	350	28000	19	12000	1300	0.074	4.5	20	6300	2.51	1.84	1.2	n/a	3500	0.84	28.2	5.9	66	66
Number of nondetects	0	148	15	1	12	91	148	0	32	0	0	0	0	0	0	131	72	8	0	0	0	144	148	3	136	0	0	0	31
Percent nondetects	0	100	10	1	8	61	100	0	22	0	0	0	0	0	0	89	49	5	0	0	0	97	100	2	92	0	0	0	21
Minimum nondetect	n/a	0.88	1.8	40	0.20	2.1	0.30	n/a	1.8	n/a	n/a	n/a	n/a	n/a	n/a	0.012	0.39	2.3	n/a	n/a	n/a	0.74	0.49	150	0.39	n/a	n/a	n/a	17
Maximum nondetect	n/a	1.8	1.8	40	0.21	7.8	0.35	n/a	12	n/a	n/a	n/a	n/a	n/a	n/a	0.014	0.42	2.3	n/a	n/a	n/a	0.88	0.58	240	0.44	n/a	n/a	n/a	61
2-Sample comparison																													
Method selection																													
Not applicable if pooled detects <16		n/a					n/a															n/a	n/a		n/a				
Gehan if multiple RLs or if combined %NDs >40						Gehan			Gehan							Gehan	Gehan							Gehan					Gehan
WRS in remaining cases	WRS		WRS	WRS	WRS			WRS		WRS	WRS	WRS	WRS	WRS	WRS			WRS	WRS	WRS	WRS					WRS	WRS	WRS	
Assigned ND value for WRS	n/a		0.90	20	0.10			n/a		n/a	n/a	n/a	n/a	n/a	n/a			1.15	n/a	n/a	n/a					n/a	n/a	n/a	
Results																													
Test statistic	4.192		2.562	3.426	1.725	3.067		5.755	4.954	6.172	8.470	6.854	-2.196	6.582	-1.154	1.306	3.449	6.310	2.010	-0.520	-4.048			0.594		0.993	4.013	5.634	1.437
Critical value	1.960		1.960	1.960	1.960	1.960		1.960	1.960	1.960	1.960	1.960	-1.960	1.960	-1.960	1.960	1.960	1.960	1.960	-1.960	-1.960			1.960		1.960	1.960	1.960	1.960
Higher sub-area if significant	A-2	n/a	A-2	A-2	ns	A-2	n/a	A-2	A-2	A-2	A-2	A-2	A-1	A-2	ns	ns	A-2	A-2	A-2	ns	A-1	n/a	n/a	ns	n/a	ns	A-2	A-2	ns

Notes: ns - not significant WRS - Wilcoxon Rank Sum

Table 5-2. Background Statistics and Concentration Limits

	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Radium-226	Radium-228	Selenium	Silver	Sodium	Thallium	Thorium	Uranium	Vanadium	Zinc
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(pCi/g)	(pCi/g)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Sub-area A1																													
Number of observations	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74
Number of detects	74	0	65	74	67	21	0	74	55	74	74	74	74	74	74	6	29	66	74	74	74	1	0	74	7	74	74	74	67
Percent detects	100	0	88	100	91	28	0	100	74	100	100	100	100	100	100	8	39	89	100	100	100	1	0	100	9	100	100	100	91
Estimation method for mean and standard deviation	arithmetic	n/a	KM	arithmetic	KM	KM	n/a	arithmetic	KM	arithmetic	arithmetic	arithmetic	arithmetic	arithmetic	arithmetic	KM	KM	KM	arithmetic	arithmetic	arithmetic	n/a	n/a	arithmetic	KM	arithmetic	arithmetic	arithmetic	KM
Mean	8066	n/a	4.1	83	0.44	4.8	n/a	5320	4.4	4.3	17	10359	5.9	2780	248	0.014	0.54	4.7	1472	1.23	1.38	n/a	n/a	513	0.48	7.7	1.2	24	26
Standard deviation	2778	n/a	3.0	29	0.19	6.2	n/a	5726	2.3	2.4	14	3027	1.7	1170	92	0.0055	0.40	2.3	627	0.269	0.286	n/a	n/a	523	0.044	2.3	0.54	11	12
Method for determining background concentration limit	90% UPL	RL	90% UPL	90% UPL	90% UPL	90% UPL	RL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	RL	RL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL
Background concentration limit	16455	0.94	13	171	1.0	24	0.32	22614	11	12	58	19502	11	6314	526	0.031	1.7	12	3365	2.04	2.24	0.80	0.54	2093	0.61	15	2.9	57	61
Sub-area A2																													
Number of observations	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74
Number of detects	74	0	68	73	69	36	0	74	61	74	74	74	74	74	74	11	47	74	74	74	74	3	0	71	5	74	74	74	50
Percent detects	100	0	92	99	93	49	0	100	82	100	100	100	100	100	100	15	64	100	100	100	100	4	0	96	7	100	100	100	68
Estimation method for mean and standard deviation	arithmetic	n/a	KM	arithmetic*	KM	KM	n/a	arithmetic	KM	arithmetic	arithmetic	arithmetic	arithmetic	arithmetic	arithmetic	KM	KM	arithmetic	arithmetic	arithmetic	arithmetic	KM	n/a	KM	KM	arithmetic	arithmetic	arithmetic	KM
Mean	10908	n/a	5.6	111	0.50	5.7	n/a	11364	7.3	6.4	78	14891	5.4	4435	251	0.018	0.90	7.8	1860	1.26	1.16	0.80	n/a	584	0.43	8.3	1.6	33	29
Standard deviation	4810	n/a	3.9	66	0.26	5.1	n/a	11675	4.0	2.7	68	4494	2.4	1806	159	0.011	0.80	3.4	1116	0.390	0.320	0.022	n/a	604	0.054	3.5	0.83	11	11
Method for determining background concentration limit	90% UPL	RL	90% UPL	90% UPL	90% UPL	90% UPL	RL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	RL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL	90% UPL
Background concentration limit	25436	1.8	17	310	1.3	21	0.35	46625	19	15	285	28465	13	9889	729	0.050	3.3	18	5229	2.44	2.13	0.87	0.58	2407	0.60	19	4.1	65	62

Notes:
* The single nondetect was set equal to 1/2 RL.
KM - Kaplan-Meier
UPL - upper prediction limit
RL – Reporting Limit

Table 5-3. Summary of Background Concentration Limits			
Constituent	**Units**	**Sub-area A-1**	**Sub-area A-2**
Aluminum	(mg/kg)	16,455	25,436
Antimony	(mg/kg)	0.94	1.8
Arsenic	(mg/kg)	13	17
Barium	(mg/kg)	171	310
Beryllium	(mg/kg)	1.0	1.3
Boron	(mg/kg)	24	21
Cadmium	(mg/kg)	0.32	0.35
Calcium	(mg/kg)	22,614	46,625
Chromium	(mg/kg)	11	19
Cobalt	(mg/kg)	12	15
Copper	(mg/kg)	58	285
Iron	(mg/kg)	19,502	28,465
Lead	(mg/kg)	11	13
Magnesium	(mg/kg)	6,314	9,889
Manganese	(mg/kg)	526	729
Mercury	(mg/kg)	0.031	0.050
Molybdenum	(mg/kg)	1.7	3.3
Nickel	(mg/kg)	12	18
Potassium	(mg/kg)	3,365	5,229
Radium-226	(pCi/g)	2.04	2.44
Radium-228	(pCi/g)	2.24	2.13
Selenium	(mg/kg)	0.80	0.87
Silver	(mg/kg)	0.54	0.58
Sodium	(mg/kg)	2,093	2,407
Thallium	(mg/kg)	0.61	0.60
Thorium	(mg/kg)	15	19
Uranium	(mg/kg)	2.9	4.1
Vanadium	(mg/kg)	57	65
Zinc	(mg/kg)	61	62